

09/11/2004

10784312

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FILE 'HOME' ENTERED AT 09:20:44 ON 09 NOV 2004

=> FIL STNGUIDE

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COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.21	0.21

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FILE CONTAINS CURRENT INFORMATION.
LAST RELOADED: Nov 5, 2004 (20041105/UP).

=> file reg

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.06	0.27

FILE 'REGISTRY' ENTERED AT 09:21:08 ON 09 NOV 2004
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STRUCTURE FILE UPDATES: 7 NOV 2004 HIGHEST RN 776240-21-2
DICTIONARY FILE UPDATES: 7 NOV 2004 HIGHEST RN 776240-21-2

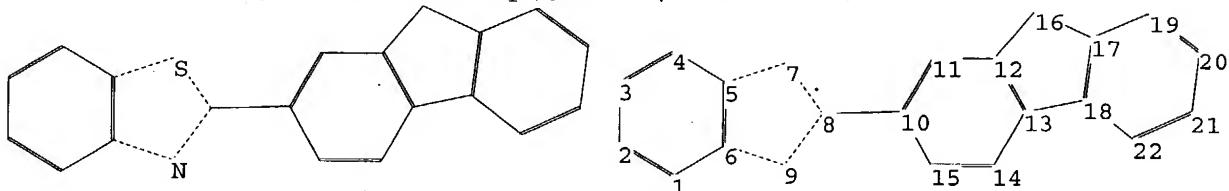
TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

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Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
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=>
Uploading C:\Program Files\Stnexp\Queries\10784312.str



ring nodes :

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

chain bonds :

8-10

ring bonds :

1-2 1-6 2-3 3-4 4-5 5-6 5-7 6-9 7-8 8-9 10-11 10-15 11-12 12-16 12-13
13-18 13-14 14-15 16-17 17-18 17-19 18-22 19-20 20-21 21-22

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exact/norm bonds :

5-7 6-9 7-8 8-9 12-16 13-18 16-17

exact bonds :

8-10

normalized bonds :

1-2 1-6 2-3 3-4 4-5 5-6 10-11 10-15 11-12 12-13 13-14 14-15 17-18

17-19 18-22 19-20 20-21 21-22

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom

11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom

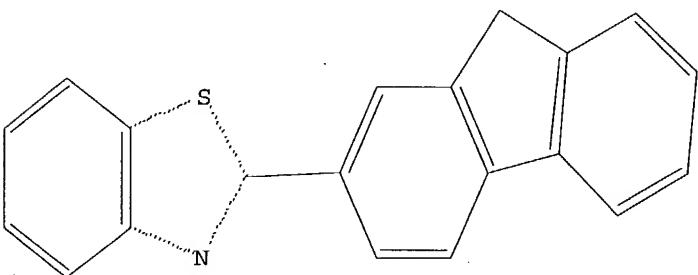
20:Atom 21:Atom 22:Atom

L1 STRUCTURE UPLOADED

=> d

L1 HAS NO ANSWERS

L1 STR



Structure attributes must be viewed using STN Express query preparation.

=> s l1 full

FULL SEARCH INITIATED 09:21:44 FILE 'REGISTRY'

FULL SCREEN SEARCH COMPLETED - 1197 TO ITERATE

100.0% PROCESSED 1197 ITERATIONS

54 ANSWERS

SEARCH TIME: 00.00.01

L2 54 SEA SSS FUL L1

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

FULL ESTIMATED COST

ENTRY

SESSION

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155.69

FILE 'CAPLUS' ENTERED AT 09:21:50 ON 09 NOV 2004

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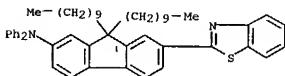
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FILE COVERS 1907 - 9 Nov 2004 VOL 141 ISS 20
FILE LAST UPDATED: 8 Nov 2004 (20041108/ED)

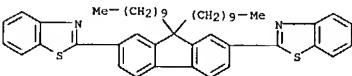
This file contains CAS Registry Numbers for easy and accurate substance identification.

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L3          49 L2
=> d ibib abs hitstr tot
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L3 ANSWER 1 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:670129 CAPLUS
 DOCUMENT NUMBER: 141:303847
 TITLE: Two-photon and beyond: 2, 3 and 4 photon absorption in conjugated fluorenes
 AUTHOR(S): Belfield, Kevin D.; Hernandez, Florencio E.; Cohanoschi, Ion; Bondar, Mykhailo V.; Van Stryland, Eric W.
 CORPORATE SOURCE: Department of Chemistry and School of Optics: CREOL and FPCOE, University of Central Florida, Orlando, FL, 32816-2366, USA
 SOURCE: Polymeric Materials: Science and Engineering (2004), 91, 346-347
 CODEN: PMSEDG; ISSN: 0743-0515
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal; (computer optical disk)
 LANGUAGE: English
 AB UV/vis and fluorescence spectroscopic techniques were applied to study photophys. behavior of 3 conjugated fluorenes in hexane: 2-(2-benzothiazolyl)-7-diphenylamino-9,9-didecylfluorene, 2,7-bis(diphenylamino)-9,9-didecylfluorene, and 2,7-bis(2-benzothiazolyl)-9,9-didecylfluorene.
 IT 262607-32-9 745079-42-9
 RL: PRP (Properties)
 (multi-photon absorption in conjugated fluorenes)
 RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

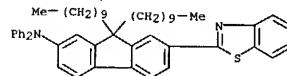


RN 745079-42-9 CAPLUS
 CN Benzothiazole, 2,2'-(9,9-didecyl-9H-fluorene-2,7-diyl)bis- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

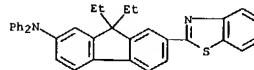
L3 ANSWER 2 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:620612 CAPLUS
 DOCUMENT NUMBER: 141:285327
 TITLE: Resonant enhancement of two-photon absorption in substituted fluorene molecules
 AUTHOR(S): Hales, Joel M.; Hagan, David J.; Van Stryland, Eric W.; Schafer, K. J.; Morales, A. R.; Belfield, K. D.; Pacher, P.; Kwon, O.; Zoyer, E.; Bredas, J. L.
 CORPORATE SOURCE: School of Optics/CREOL, University of Central Florida, Orlando, FL, 32816-2700, USA
 SOURCE: Journal of Chemical Physics (2004), 121(7), 3152-3160
 CODEN: JCPSA6; ISSN: 0021-9606
 PUBLISHER: American Institute of Physics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The degenerate and nondegenerate two-photon absorption (2PA) spectra for a sym. and an asym. fluorene derivative were exptl. measured in order to determine the effect of intermediate state resonance enhancement (ISRE) on the 2PA cross section δ . The ability to tune the individual photon energies in the nondegenerate 2PA (ND-2PA) process afforded a quant. study of the ISRE without modifying the chemical structure of the investigated chromophores. Both mols. exhibited resonant enhancement of the nonlinearity with the asym. compound showing as much as a twentyfold increase in δ . Furthermore, the possibility of achieving over a one order of magnitude enhancement of the nonlinearity reveals the potential benefits of utilizing ND-2PA for certain applications. To model ISRE, we have used correlated quantum-chemical methods together with the perturbative sum-over-states (SOS) expression. We find strong qual. and quant. correlation between the exptl. and theor. results. Finally, using a simplified three-level model for the SOS expression, we provide intuitive insight into the process of ISRE for ND-2PA.
 IT 262607-32-9
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (resonant enhancement of two-photon absorption in substituted fluorene mols.)
 RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



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L3 ANSWER 3 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

L3 ANSWER 3 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:577508 CAPLUS
 DOCUMENT NUMBER: 141:267426
 TITLE: Few-states models for three-photon absorption
 AUTHOR(S): Coonstrand, Peter; Norman, Patrick; Luo, Yi; Agren, Hans
 CORPORATE SOURCE: Theoretical Chemistry, SCFAB, Royal Institute of Technology, Stockholm, SE-106 91, Swed.
 SOURCE: Journal of Chemical Physics (2004), 121(5), 2020-2029
 CODEN: JCPSA6; ISSN: 0021-9606
 PUBLISHER: American Institute of Physics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Few-states models are derived for the calcn. of three-photon absorption matrix elements. Together with earlier derived few-states models for two-photon absorption, the models are evaluated against results from response theory calcs. that provide the full sum-over-states values. It is demonstrated that not even for systems with charge-transfer character, where few-states models for two-photon absorption are in excellent agreement with response theory, do the models provide a quant. correct description for three-photon absorption. The convergence behavior, merits, and shortcomings of the models are elucidated in some detail.
 The role of various characteristics of the electronic structure, such as symmetry, charge transfer, and conjugation-important for the formation of a large three-photon cross section-is analyzed. As for two-photon absorption cross sections, it is essential to consider generalized few-states models also for three-photon absorption, i.e., to account for dipolar directions and laser beam polarization. Despite their poor quant. performance, it is argued that few-states models at times can be useful for interpretation purposes when applied to three-photon absorption.
 IT 222617-85-8
 RL: PRP (Properties)
 (few-states models for three-photon absorption in)
 RN 222617-85-8 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 4 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:543643 CAPLUS
 DOCUMENT NUMBER: 141:13812
 TITLE: Synthesis, Characterization, and Optical Properties
 of
 AUTHOR(S): New Two-Photon-Absorbing Fluorene Derivatives
 Beifield, Kevin D.; Morales, Alma R.; Kang, Bong-Soo;
 Hales, Joel M.; Hagan, David J.; Van Stryland, Eric
 W.; Chapela, Victor M.; Percino, Judith
 CORPORATE SOURCE: Department of Chemistry and College of Optics and
 Photonics: CREOL FPCCE, University of Central Florida,
 Orlando, FL, 32816, USA
 SOURCE: Chemistry of Materials (2004), 16(23), 4634-4641
 CODEN: CMATEX; ISSN: 0897-4756
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The synthesis of a series of four new compds. containing fluorene
 chromophores is presented, along with the results of spectroscopic and
 photochem. studies aimed at understanding the two-photon absorption
 properties and energetics of their electronically excited states. The
 mol. structures of the compds. were systematically varied to allow
 comparison of mols. possessing high and low mol. symmetry, short and long
 alkyl chains, and a fluorene conjugated π -system. Solvent-dependent
 absorption and emission were investigated along with π -conjugation
 length. Preliminary measurements of two-photon absorption (2PA) using a
 two-photon fluorescence method indicate that these chromophores exhibit
 high two-photon absorptivity. A sym. mol. (3), possessing a relatively
 large π -conjugated system, flanked on either side by
 electron-withdrawing groups (benzothiophene), exhibited a peak 2PA cross
 section (8) of $6000 + 10 - 50$ cm 4 a photon $^{-1}$ mol $^{-1}$ at 600 nm.
 Excitation anisotropy studies revealed the position of the $S_0 + S_1$
 and $S_0 + S_2$ electronic transitions. Consistent with quantum mech.
 selection rules, the two-photon allowed transition ($S_0 + S_2$) was
 dominant.

IT 745079-41-8P 745079-42-9P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (synthesis, characterization, and optical spectra of
 two-photon-absorbing fluorene derivs.)
 RN 745079-41-8 CAPLUS
 CN Benzothiazole, 2,2'-(9,9-diethyl-9H-fluorene-2,7-diyl)bis- (9CI) (CA
 INDEX NAME)

Chemical structure of CAPILUS (745079-42-9): A central 9,9-didecyl-9H-fluorene-2,7-diylium cation is shown in a chair conformation, with two ethyl groups (Et) attached to the 2 and 7 positions. It is flanked by two 2-thiophenyl groups, each attached to a benzothiophene ring.

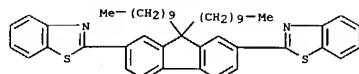
L3 ANSWER 5 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:442599 CAPLUS .
 DOCUMENT NUMBER: 141:156786
 TITLE: Three-photon absorption enhancement in a symmetrical
 charge transfer fluorene derivative
 AUTHOR(S): Hernandez, Florencio E.; Belfield, Kevin D.;
 Cohanochi, Ion
 CORPORATE SOURCE: Department of Chemistry and School of
 Optics/CREOL/PCPE, University of Central Florida,
 Orlando, FL, 32816-2366, USA
 SOURCE: Chemical Physics Letters (2004), 391(i-3), 22-26
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The authors report the 3-photon absorption-induced upconversion
 fluorescence emission and the 3-photon absorption cross-section of 2
 fluorene derivs. with D-x-M (9,9-didecylo-2,7-bis-(N,N'-
 diphenylamino)fluorene) and D-x-A ((7-benzothiophen-2-yl-9,9'-
 didecyfluoren-2-yl)diphenylamine) structural motifs. The 3-photon
 absorption cross-section of the D-x-A analog ($\sigma^3 = 82 +$
 $10-78 \text{ cm}^6 \text{ s}^2 \text{ photon}^{-2}$) is 2.7 times greater than that of its D-x-A
 counterpart ($\sigma^3 = 37 + 10-78 \text{ cm}^6 \text{ s}^2 \text{ photon}^{-2}$), showing that
 sym. charge transfer enhances 3PA. The 3-photon-excitation of these 2
 compds. in hexane solution (9.8 + 10-3 M) was accomplished with a
 tunable OFG pumped by picosecond laser pulses. The 3-photon absorption
 coeffs. were measured using an open aperture Z-scan technique.
 IT 262607-32-9
 RIC: DPL (Chemical Abstracts)

RB: KRP (Properties)
 (three-photon absorption enhancement in sym. charge transfer fluorene
 derivs. optical spectra)
 RN 262607-32-9 CAPLUS
 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI)
 ICA INDEX NAMEL

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L3 ANSWER 4 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



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L3 ANSWER 6 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:360279 CAPLUS
DOCUMENT NUMBER: 140:392334
TITLE: Two-photon responsive chromophores containing
electron accepting core units
INVENTOR(S): Kannan, Ramamurthi; Tan, Loon-seng; Reinhardt, Bruce
A.; Vaia, Richard A.
PATENT ASSIGNEE(S): The United States of America as Represented by the
Secretary of the Air Force, USA
SOURCE: U.S., 6 pp.
DOCUMENT TYPE: CODEN: USXXAM
LANGUAGE: Patent
FAMILY ACC. NUM. COUNT: 1 English
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6730793	B1	20040504	US 2002-171566	20020613
PRIORITY APPLN. INFO.:			US 2002-171566	20020613

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT.

AB Chromophores are described by the general formula Q-(-L-Z)x (x = 2 or 3; Q is selected from I, II, III, IV, V, and VI; L = VII; R = Cl-20 alkyl groups, and Z = VIII or IX). The chromophores may exhibit high two-photon absorptions. Thus, 5-(*o*-Bz)-7(*o*-Bz)-9-*o*-V, 9,9-dicyanofluoren-2-yl)-1,3-thia[4.4.4]dithiacyclo[4.4.4]octa-1,3,5-triene-7,8-diene-4,6-dione (VII) is a

IT 685531-21-9B 685531-22-0P
RL: SPM (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chromophores with high two-photon absorptions)

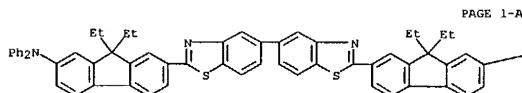
RN 685531-21-9 CAPLUS
CN 9H-Fluoren-2-amine, 7,7'-benzo[1,2-d:4,5-d']bisthiazole-2,6-diylbis[9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

RN 685531-22-0 CAPLUS
 CN 9H-Fluoren-2-amine, 7,7'-(5,5'-bibenzothiophene)-2,2'-diylbis[9,9-diethyl-N,N-diphenyl-9H-] (ACI TMPEX NAME)

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L3 ANSWER 6 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



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REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 7 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:344262 CAPLUS

DOCUMENT NUMBER: 141:72953
TITLE: Fluorescence Resonance Energy Transfer in Novel Multiphoton Absorbing Dendritic Structures
AUTHOR(S): Brousmiche, Darryl W.; Serin, Jason M.; Frechet, Jean M. J.; He, Guang S.; Lin, Tzu-Chau; Chung, Sung-Jae; Prasad, Paras N.; Kannan, Ramamurthi; Tan, Loon-Seng
CORPORATE SOURCE: Department of Chemistry, University of California, Berkeley, CA, 94720-1460, USA
SOURCE: Journal of Physical Chemistry B (2004), 108(25), 8592-8600

CODEN: JPCBFR; ISSN: 1520-6106

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 141:72953

AB A series of small dendritic structures containing one of two efficient multiphoton absorbing dyes at the periphery and a nile red derivative at the core have been synthesized. These mols. display efficient (>96%) fluorescence resonance energy transfer (FRET) from the periphery to the core on selective excitation of the two-photon absorbing chromophore by either UV (linear absorption) or high-intensity IR (nonlinear absorption) radiation. In addition, a significant increase in core emission is observed on excitation of the peripheral chromophores, compared to direct excitation of the core. This "antenna effect" essentially doubles between increasing dendrimer generations within a series. The combination of the ability of the peripheral chromophores to absorb high-intensity IR radiation, coupled

with a very efficient energy transfer process and a significant increase in the fluorescence of the acceptor chromophore, makes these mols. potentially useful for a variety of applications, including optical power limiting and biomedical imaging.

IT 710507-70-3

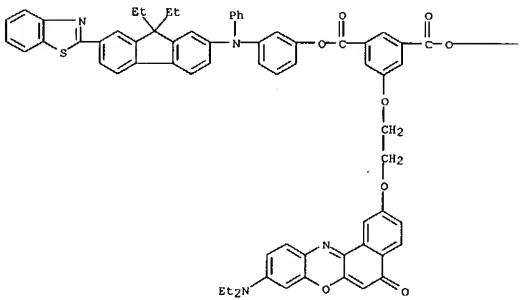
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (fluorescence resonance energy transfer in Nile Red-based multiphoton absorbing dendritic structures)

RN 710507-70-3 CAPLUS

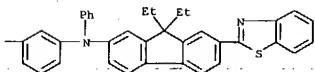
CN 1,3-Benzenedicarboxylic acid, 5-[2-[(9-(diethylamino)-5-oxo-5H-benzo[a]phenoxazin-2-yl)oxy]ethoxy]-, bis[3-[(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)phenylamino]phenyl] ester (9CI) (CA INDEX NAME)

L3 ANSWER 7 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

PAGE 1-A



PAGE 1-B

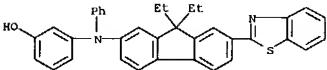


IT 710507-66-7

RL: RCT (Reactant); RACT (Reactant or reagent) (fluorescence resonance energy transfer in Nile Red-based multiphoton absorbing dendritic structures)

RN 710507-66-7 CAPLUS

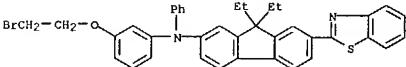
CN Phenol,
3-[(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)phenylamino]-
(9CI) (CA INDEX NAME)



REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

Saeed

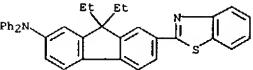
L3 ANSWER 8 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:300925 CAPLUS
 DOCUMENT NUMBER: 141:30986
 TITLE: Singlet Oxygen Generation via Two-Photon Excited FRET
 AUTHOR(S): Dichtel, William R.; Serlin, Jason M.; Edder, Carine;
 Frechet, Jean M. J.; Matuszewski, Michael; Tan, Loon-Seng; Ohulchansky, Tymish Y.; Prasad, Paras N.
 CORPORATE SOURCE: Department of Chemistry, University of California, Berkeley, CA, 94720-1460, USA
 SOURCE: Journal of the American Chemical Society (2004), 126(17), 5380-5381
 CODEN: JACSAT; ISSN: 0002-7863
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A modified porphyrin mol. is studied that has enhanced two-photon absorption (TPA) cross-section. The mol. consists of a dendritic array of eight donor chromophores capable of two-photon absorption covalently attached to a central porphyrin acceptor. Steady-state fluorescence measurements demonstrated that the donor chromophores transfer excited-state energy to the porphyrin with 97% efficiency. Two-photon excitation of the donor chromophores at 780 nm resulted in a dramatic increase in porphyrin fluorescence relative to a porphyrin model compound. Efficient singlet oxygen generation was observed from oxygen-saturated solns. of this porphyrin compound under two-photon excitation conditions.
 Electronic supplementary information (ESI) is available at <http://pubs.acs.org> and contains details and chemical characterization data of the porphyrin compound.
 IT 700365-35-1
 RL: PRP (Properties)
 (model donor chromophore AF-343; singlet oxygen generation via two-photon excitation of sensitizer compound comprising porphyrin acceptor and dendritic array of eight donor chromophores)
 RN 700365-35-1 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N-(3-(2-bromoethoxy)phenyl)-9,9-diethyl-N-phenyl- (9CI) (CA INDEX NAME)



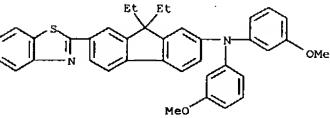
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6

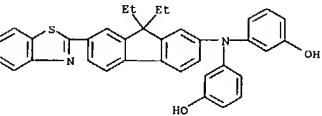
L3 ANSWER 9 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 (in prep. and characterization of thermally cross-linkable two-photon responsive chromophores)
 RN 222617-85-8 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



RN 701971-73-5 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-bis(3-methoxyphenyl)- (9CI) (CA INDEX NAME)



RN 701971-75-7 CAPLUS
 CN Phenol, 3,3'-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)imino]bis- (9CI) (CA INDEX NAME)



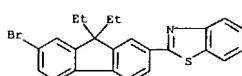
IT 701971-78-0P 701971-81-5P 701971-84-8P
 701971-97-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (monomer; preparation and characterization of thermally cross-linkable two-photon responsive chromophores)
 RN 701971-78-0 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-bis[3-(2-propenyl)phenyl]- (9CI) (CA INDEX NAME)

L3 ANSWER 9 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:234604 CAPLUS
 DOCUMENT NUMBER: 141:38865
 TITLE: Synthesis and characterization of thermally cross-linkable two-photon responsive chromophores
 AUTHOR(S): Tan, Loon-Seng; Kanhan, Ramamurthi; Dombroskie, Ann G.; Simko, Sharon R.; Houtz, Marlene; He, Guang S.; Lin, Tzu-Chau; Prasad, Paras N.
 CORPORATE SOURCE: Polymer Branch, AFRL/MILPB, Wright-Patterson Air Force Base, WPAFB, OH, 45433, USA
 SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2004), 45(1), 901-902
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry
 DOCUMENT TYPE: Journal: (computer optical disk)
 LANGUAGE: English

AB Four new cross-linkable two-photon chromophores containing propargylether, methylpropargylether, allylether and methylallylether endgroups were prepared via Pd-catalyzed amination of 3,3'-dimethoxydiphenylamine and 7-benzothiazol-2-yl-9,9-diethyl-2-bromofluorene, followed by demethylation via pyridinium chloride and Williamson reaction with appropriate alkyl bromides in the presence of potassium carbonate in DMF. In comparison with the unfunctionalized analog (AF-240, 9746 GM), their effective, nanosecond two-photon cross-sections ranging from 6560 to 10,400 GM (1 GM=10-50 cm⁴ s / photon-mol.) were mostly unaffected by having allylether or propargylether functions at the 3,3'-positions of the diphenylamine group. Thermal anal. results indicated that they could be thermally polymerized, and higher degrees of curing could be achieved in air than under inert atmospheric. The influence of thermal curing on their linear and nonlinear properties is the subject of future studies.

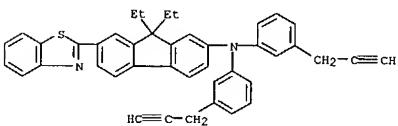
IT 225113-41-7
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in preparation and characterization of thermally cross-linkable two-photon responsive chromophores)

RN 225113-41-7 CAPLUS
 CN Benzothiazole, 2-(7-bromo-9,9-diethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)

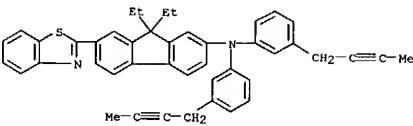


IT 222617-95-8P 701971-73-5P 701971-75-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

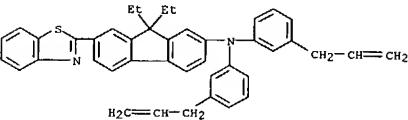
L3 ANSWER 9 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



RN 701971-81-5 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N,N-bis[3-(2-butynyl)phenyl]-9,9-diethyl- (9CI) (CA INDEX NAME)

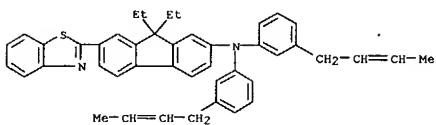


RN 701971-84-8 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-bis[3-(2-propenyl)phenyl]- (9CI) (CA INDEX NAME)



RN 701971-87-1 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N,N-bis[3-(2-butenyl)phenyl]-9,9-diethyl- (9CI) (CA INDEX NAME)

L3 ANSWER 9 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



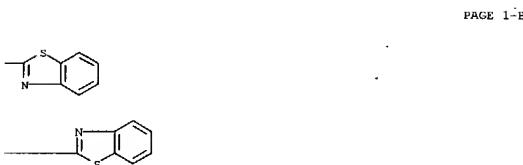
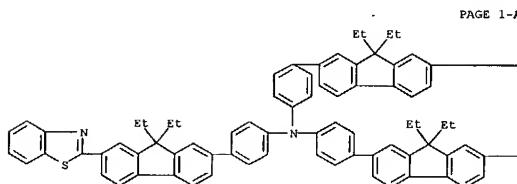
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L3 ANSWER 10 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

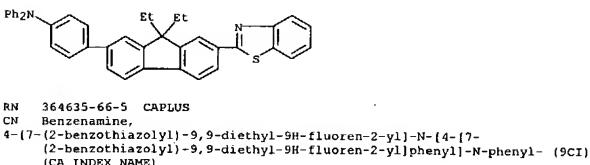
ACCESSION NUMBER: 2004:210510 CAPLUS
 DOCUMENT NUMBER: 140:414514
 TITLE: Degenerate two-photon-absorption spectral studies of highly two-photon active organic chromophores
 AUTHOR(S): He, Guang S.; Lin, Tzu-Chau; Dai, Jianning; Prasad, Paras N.; Kannan, Ramamurthi; Dombroskie, Ann G.; Vaia, Richard A.; Tan, Loon-Seng
 CORPORATE SOURCE: Photonics and Biophotonics, Institute for Lasers, State University of New York at Buffalo, Buffalo, NY, 14260-3000, USA
 SOURCE: Journal of Chemical Physics (2004), 120(11), 5275-5284
 CODEN: JCPSA6; ISSN: 0021-9606
 PUBLISHER: American Institute of Physics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Degenerate two-photon absorption (TPA) spectral properties of five AFX chromophore solns. have been studied using a single and spectrally dispersed sub-picosecond white-light continuum beam. In a specially designed optical configuration, optical pathways inside the sample solution for different spectral components of the focused continuum beam were spatially separated from each other. Thus, the nondegenerate TPA processes coming from different spectral components can be eliminated, and the direct nonlinear absorption spectrum attributed to degenerate TPA processes can be readily obtained. Using this new technique, the complete TPA spectra for these five highly two-photon-active compds. (AF-380, AF-350, AF-295, AF-270, and AF-50) were obtained in the spectral range from 600 to 950 nm on an absolute scale of TPA cross section. The relationship between the mol. structures and their TPA spectral behaviors are discussed. In general the measured TPA spectra are not identical with the linear absorption spectra on the scale of absorbed photon(s) energy. Moreover, for some sample (such as AF-380), the TPA spectrum is totally different from the linear spectrum, which implies the difference of mol. transition pathways and selection rules for one- and two-photon excitation processes. At high excitation intensity levels (>15 GW/cm²), the saturation behavior of TPA transition can be observed obviously in AF-350 and AF-380 solns. that exhibit much higher nonlinear absorptivity than the other chromophores investigated.

IT 267667-11-8 CAPLUS
 364635-72-3
 RL: PRP (Properties)
 (degenerate two-photon-absorption spectral studies of highly two-photon active dialkylfluorene-based chromophores)
 RN 267667-11-8 CAPLUS
 CN Benzenamine, 4-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-N,N-bis[4-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]phenyl]- (9CI) (CA INDEX NAME)

L3 ANSWER 10 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



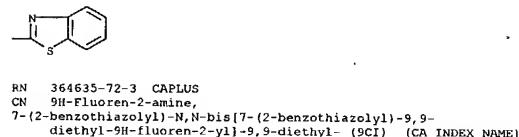
RN 287493-07-6 CAPLUS
 CN Benzenamine, 4-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-N,N-diphenyl- (9CI) (CA INDEX NAME)



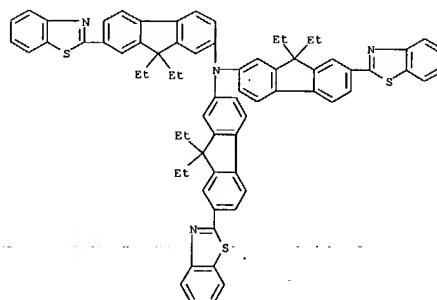
RN 364635-66-5 CAPLUS
 CN Benzenamine, 4-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-N-(4-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]phenyl)-N-phenyl- (9CI) (CA INDEX NAME)

L3 ANSWER 10 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

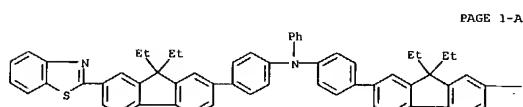
PAGE 1-B



RN 364635-72-3 CAPLUS
 CN 9H-Fluoren-2-amine,
 7-(2-benzothiazolyl)-N,N-bis[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 73 THERE ARE 73 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

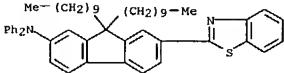


L3 ANSWER 11 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:165037 CAPLUS
 DOCUMENT NUMBER: 141:96518
 TITLE: Photochemical properties of (7-benzothiazol-2-yl-9,9-didecylfluoren-2-yl)diphenylamine under one- and two-photon excitation
 AUTHOR(S): Belfield, Kevin D.; Bondar, Mykhailo V.; Przhonska, Olga V.; Schafer, Katherine J.
 CORPORATE SOURCE: Department of Chemistry and School of Optics/CREOL, University of Central Florida, Orlando, FL, 32816-2366, USA
 SOURCE: Journal of Photochemistry and Photobiology, A: Chemistry (2004), 162(2-3), 569-574
 CODEN: JPCEJ; ISSN: 1010-6030
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The photochem. properties of the fluorene derivative (7-benzothiazol-2-yl-9,9-didecylfluoren-2-yl)diphenylamine (I) in hexane and CH₂Cl₂ were studied under linear (one-photon) and nonlinear (two-photon) excitation. The quantum yield of the photochem. reaction, Φ , for I in hexane was in the range (3.5-5)×10⁻⁵ for one-photon excitation (UVG-L25 and Xe-lamps) and was nearly the same under two-photon excitation (femtosecond laser with pulse duration 120 fs, average power approx. 10 mW, repetition rate = 1 kHz). The values of Φ in CH₂Cl₂ were (2.5-4)×10⁻⁵ for one-photon excitation and increased 50-80 times under two-photon excitation. This increase can be explained by an addnl. one-photon absorption process from the first electronically excited state, resulting in the observed enhancement in photochem. decomposition

IT 262607-32-9

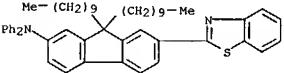
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (photochem. properties of (7-benzothiazol-2-yl-9,9-didecylfluoren-2-yl)diphenylamine under one- and two-photon excitation)

RN 262607-32-9 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI)
 (CA INDEX NAME)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 12 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 12 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:165020 CAPLUS
 DOCUMENT NUMBER: 141:130452
 TITLE: Two-photon absorption cross-sections of common photoinitiators
 AUTHOR(S): Schafer, Katherine J.; Hales, Joel M.; Balu, Mihaela; Belfield, Kevin D.; Van Stryland, Eric W.; Hagan, David J.
 CORPORATE SOURCE: Department of Chemistry, University of Central Florida, Orlando, FL, 32826, USA
 SOURCE: Journal of Photochemistry and Photobiology, A: Chemistry (2004), 162(2-3), 497-502
 CODEN: JPCEJ; ISSN: 1010-6030
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Recent interests in and applications of two-photon absorption (2PA) induced photopolymer, have afforded advanced opportunities to perform three-dimensionally resolved polymerization, resulting in intricate microfabrication and imaging. Many of the reported 2PA-induced polymers, make use of com. available photoinitiators, and a key parameter to consider is the two-photon absorption cross-section (δ) of the initiator. To date, there has been no comprehensive investigation of two-photon absorptivity of com. photoinitiators, though a few studies presenting novel photoinitiators for two-photon polymerization have appeared.

The authors report the 2PA properties of common, com. available photoinitiators typically utilized in conventional radiation curing science and technologies, and often used in 2PA-based polymers. Z-scan and white-light continuum (WLC) pump-probe techniques were utilized to obtain two-photon absorption cross-sections (8). The results for most compds. were found to yield good agreement between the two methods. Most of the photoinitiators studied possess low δ , except Irgacure OXE01, indicating a need for the development of new photoinitiators with improved properties optimized for 2PA applications. A compound prepared in our labs.

exhibits high 2PA and was useful as a two-photon free-radical photoinitiator.

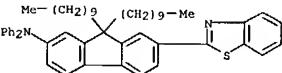
IT 262607-32-9, DPABZ
 RL: PRP (Properties)
 (DPABZ: two-photon absorption cross-sections of common photopolymer photoinitiators measured by Z-scan and white-light continuum pump-probe techniques)RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI)
 (CA INDEX NAME)

L3 ANSWER 13 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2004:165018 CAPLUS
 DOCUMENT NUMBER: 141:233070
 TITLE: Photostability of a series of two-photon absorbing fluorene derivatives

AUTHOR(S): Belfield, Kevin D.; Bondar, Mykhailo V.; Przhonska, Olga V.; Schafer, Katherine J.
 CORPORATE SOURCE: Department of Chemistry and CREOL/School of Optics, University of Central Florida, Orlando, FL, 32816-2366, USA
 SOURCE: Journal of Photochemistry and Photobiology, A: Chemistry (2004), 162(2-3), 489-496
 CODEN: JPCEJ; ISSN: 1010-6030

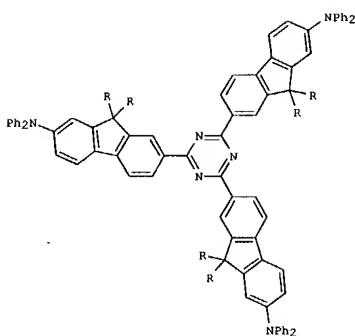
PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The photochem. stability of a series of two-photon absorbing (TPA) fluorene derivs. was investigated in air- and N₂-saturated acetonitrile (ACN) at room temperature. The quantum yields of the photoreactions, Φ , were determined at various concns. of the fluorene derivs., oxygen concentration of the solvent, and irradiation wavelength. The absorption and fluorescence spectra of the photoproducts, corresponding to different excitation conditions, were analyzed. Photooxidn. and electron transfer processes are proposed as photobleaching mechanisms for the fluorene derivs. in ACN. The relatively low photochem. quantum yields (Φ approx. 10⁻⁴) make the derivs. particularly promising for linear and nonlinear optical applications.

IT 262607-32-9
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (photochem. properties of two-photon absorbing fluorene derivs. in acetonitrile solution as function of concentration and oxygen content and irradiation wavelength)

RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI)
 (CA INDEX NAME)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

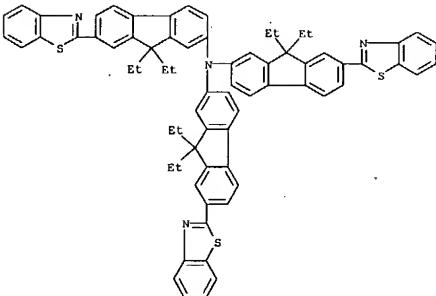
L3 ANSWER 14 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2003:935949 CAPLUS
 DOCUMENT NUMBER: 140:94017
 TITLE: Toward Highly Active Two-Photon Absorbing Liquids. Synthesis and Characterization of 1,3,5-Triazine-Based Octupolar Molecules
 AUTHOR(S): Kannan, Ramamurthi; He, Guang S.; Lin, Tzu-Chau; Prasad, Paras N.; Vaia, Richard A.; Tan, Loon-Seng
 CORPORATE SOURCE: Systran Systems Corporation, Dayton, OH, 45432, USA
 SOURCE: Chemistry of Materials (2004), 16(1), 105-104
 CODEN: CMATEX; ISSN: 0897-4756
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 140:94017
 GI



AB Novel two-photon absorbing chromophores I (R = Me(CH₂)₉, Me₂CHCH₂CH₂CH₂CHMeCH₂CH₂, H₂C:CHCH₂) are prepared containing 1,3,5-triazine π -electron deficient cores, dialkylfluorene aromatic bridges, and diphenylamino electron-donating end-groups. I (R = Me(CH₂)₉) possesses a high effective two-photon absorption cross-section (ω^2 = 39 500 + 10-50 cm⁴·sec⁻¹·photon⁻¹, or 39 500 GM) as determined by nonlinear transmission in the nanosecond regime at 800 nm, while I (R = Me₂CHCH₂CH₂CH₂CHMeCH₂CH₂)₂, a mixture of stereoisomers with the same chemical

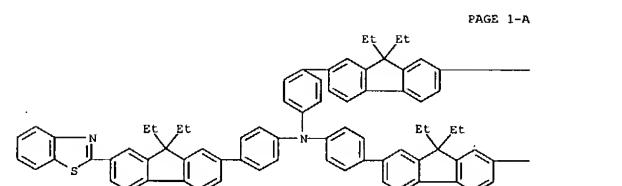
L3 ANSWER 14 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

RN 364635-72-3 CAPLUS
 CN 9H-Fluoren-2-amine,
 7-(2-benzothiazolyl)-N,N-bis[7-(2-benzothiazolyl)-9,
 diethyl-9H-fluoren-2-yl]-9,9-diethyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: THIS FORMAT: 86 THERE ARE 86 CITED REFERENCES AVAILABLE FOR RECORD. ALL CITATIONS AVAILABLE IN THE RE

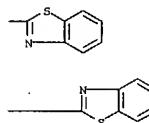
L3 ANSWER 14 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 formula as I (R = Me(CH₂)₉, is a glassy material that becomes fluid (molasses-like) upon heating at 70-80 °C and has a noticeably smaller effective two-photon absorption cross-section (33 300 GM). I (R = H₂C:CHCH₂) has a lower effective two-photon absorption cross-section than I (R = Me(CH₂)₉, Me₂CHCH₂CH₂CH₂CHMeCH₂CH₂) (ω^2 = 27 800 GM) but is prep'd. as a precursor to two-photon absorbing liggs. The intrinsic two-photon absorption cross-sections of I are also detd. as a function of excitation wavelengths via a femtosecond white-light continuum generation and direct degenerate-TPA measurement technique. At the two-photon absorption peaks .apprx.779 nm, their effective two-photon absorption cross-section values are 216, 214, and 199 GM ($\pm 15\%$) for I [R = Me(CH₂)₉, Me₂CHCH₂CH₂CH₂CHMeCH₂CH₂, H₂C:CHCH₂], resp.
 IT 267667-11-8 364635-72-3
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (preparation of octupolar mol's. with 1,3,5-triazine cores,
 9,9-dialkylfluorene linkers and diarylamine termini as potential
 two-photon absorbing chromophores and liggs. and comparison to previous
 chromophores)
 RN 267667-11-8 CAPLUS
 CN Benzenamine, 4-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-N-
 bis[4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)phenyl]- (9CI)
 (CA INDEX NAME)



PAGE 1-A



PAGE 1-B



L3 ANSWER 15 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2003:891025 CAPLUS
 DOCUMENT NUMBER: 141:170155
 TITLE: Reactive two-photon fluorescent probes for biological imaging
 AUTHOR(S): Belfield, Kevin D.; Schafer, Katherine J.; Yao, Sheng;
 Hales, Joel M.; Hagan, David J.; Van Stryland, Eric

W. CORPORATE SOURCE: Department of Chemistry, Univ. of Central Florida, Orlando, FL, 32816, USA
 SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2003), 5211(Nonlinear Optical Transmission and Multiphoton Processes in Organics), 91-95

PUBLISHER: SPIE-The International Society for Optical Engineering
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Two-photon fluorescence microscopy is a prominent tool in biol. imaging anal. Many com. available fluorescent dyes currently being used have sufficed for multiphoton based imaging of biol. samples. While measured two-photon cross-sections (in Gopp Meyer, GM units) of some of the dyes are available, many exhibit relatively low two-photon cross-section values in the tunability range of Ti:sapphire lasers commonly used in multiphoton microscopy imaging. For example, Bodipy FL exhibits a maximum GM unit of 18

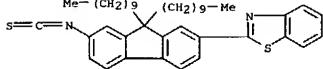
at 925 nm, compared to a range of 2-4 GM units from 775-875 nm. Furthermore, available fluorophores may be plagued with either low fluorescence quantum yield and/or the addnl. problem of rapid photobleaching upon exposure to the high peak power provided by the f_s laser source. In order to address the demand for better performing dyes for two-photon based imaging, we have prepared a new series of reactive fluorophores tailored for multiphoton imaging. These fluorophores are based upon the fluorene ring system, known to exhibit high fluorescence quantum yields, typically > 0.7, and possess high photostability. They have been functionalized with various moieties to act, e.g., as efficient amine-reactive fluorescent probes for the covalent attachment onto amine-containing biomols. Single-photon spectral characteristics, as well as measured two-photon cross sections of a reactive fluorophore and its model

conjugate in solution, as well as spectral characterizations of a bovine serum albumin (BSA) conjugate are presented.
 IT 733045-02-8

RL: ARU (Analytical role, unclassified); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent)
 (reactive two-photon fluorescent probes for biol. and protein imaging)
 RN 733045-02-8 CAPLUS
 CN Benzothiazole, 2-(9,9-didecyl-7-isothiocyanato-9H-fluoren-2-yl)- (9CI)
 (CA INDEX NAME)

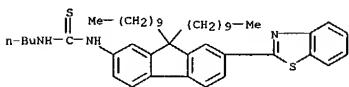
L3 ANSWER 15 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

(Continued)



IT 733045-03-9P

RL: ARU (Analytical role, unclassified); SPN (Synthetic preparation);
 ANST (Analytical study); PREP (Preparation)
 RN 733045-03-9 CAPLUS
 CN Thiourea, N-[7-(2-benzothiazolyl)-9,9-didecyl-9H-fluoren-2-yl]-N'-butyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
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L3 ANSWER 16 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:891017 CAPLUS
 DOCUMENT NUMBER: 141:196943
 TITLE: Nonlinear optical spectroscopic characterization of a series of fluorene derivatives

AUTHOR(S): Hales, Joel M.; Schaefer, Katherine J.; Morales, Alma M.; Belfield, Kevin D.; Hagan, David J.; Van Stryland, Eric W.

CORPORATE SOURCE: School of Optics/CREOL, Univ. of Central Florida, Orlando, FL, 32816, USA

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2003), 5211 (Nonlinear Optical Transmission and Multiphoton Processes in Organics), 21-30

PUBLISHER: SPIE-The International Society for Optical Engineering
 DOCUMENT TYPE: Journal

LANGUAGE: English

AB The authors have performed nonlinear spectroscopic measurements to study the chemical structure/nonlinear optical property relations for a set of alkyl fluorene derivs. The characterization method the authors used is a femtosecond white-light continuum (WLC) pump-probe spectrometer that can rapidly characterize an organic samples nondegenerate two-photon absorption

(2PA) spectrum. The nature of these expts. requires sophisticated data anal. In particular, the relative group velocity mismatch between the pump and probe, which are at different frequencies, makes these pulses walk through each other within the thickness of the sample. For widely different frequencies, this can severely diminish the 2PA signal strength.

However, given careful anal., the authors found good agreement with known semiconductor samples. Confidence in this method has allowed the authors to study the effects of solvent effect, electron-withdrawing character, conjugation length, and symmetry on the two-photon absorbing properties of

these mols. The authors found an optimum solvent polarity as well as electron-withdrawing character which serves to maximize the strength of the 2PA in these materials. Different synthesis avenues provided the authors with two different methods of extending the conjugation length that increases the nonlinearity as well. Finally, studies of mols. with disparate symmetry have allowed the authors to identify the symmetry of the excited states. The authors present the 1st exptl. study of the intermediate state resonance enhancement of nondegenerate 2PA in organic mols. Using a simplified sum-over-states expression, the authors make comparisons between experiment and theory.

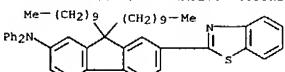
IT 262607-32-9

RL: PRP (Properties)
 (nonlinear optical spectroscopic characterization of a series of fluorene derivs.)

RN 262607-32-9 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

L3 ANSWER 16 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L3 ANSWER 17 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:702370 CAPLUS
 DOCUMENT NUMBER: 140:41640
 TITLE: Influence of electron-acceptor strength on the resonant two-photon absorption cross sections of diphenylaminofluorene-based chromophores

AUTHOR(S): Guo, Jing-Dong; Wang, Chuan-Kui; Luo, Yi; Agren, Hans Theoretical Chemistry, SCFAB, Royal Institute of Technology, Stockholm, S-10691, Swed.

SOURCE: Physical Chemistry Chemical Physics (2003), 5(18), 3869-3873

CODEN: PPCPFO; ISSN: 1463-9076

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Resonant two-photon absorption (TPA) cross sections of a series of diphenylaminofluorene-based chromophores with various electron acceptors are predicted using the RPA and using hybrid d. functional theory implemented for a two-state model. A comparison of the two methods indicates that the two-state model is adequate for describing the TPA cross sections of all asym. charge-transfer systems under investigation. It is demonstrated that the inclusion of electron correlation can

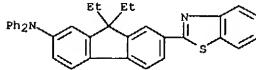
drastically increase the absolute values of the TPA cross sections, but that it has negligible effects on the relative order of the TPA activity of the mols.

IT 222617-85-8, AF-240

RL: PRP (Properties)
 (influence of electron-acceptor strength on resonant two-photon absorption cross sections of diphenylaminofluorene-based chromophores)

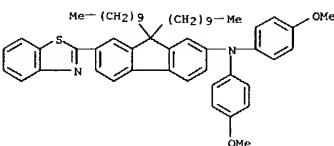
RN 222617-85-8 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



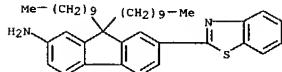
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR
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L3 ANSWER 18 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2003:381591 CAPLUS
 DOCUMENT NUMBER: 138:330846
 TITLE: Nondestructive multiphoton fluorescence imaging of polymeric materials
 AUTHOR(S): Belfield, Kevin D.; Schafer, Katherine J.; Van Stryland, Eric W.
 CORPORATE SOURCE: Dep. of Chem., Univ. of Central Florida, Orlando, FL, 32816, USA
 SOURCE: Polymeric Materials Science and Engineering (2001), 84, 1010-1011
 CODEN: PMSEDG; ISSN: 0743-0515
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The design of efficient multiphoton absorbing chromophores, their photophys. properties, and uses in three-dimensional, nondestructive multiphoton fluorescence imaging of polymeric materials, e.g., fibrin, synthetic polymers, are described. The method is illustrated with imaging of fluorophore mixture with poly(Me methacrylate).
 IT 289892-09-7
 RL: NUV (Other use, unclassified); PRP (Properties); USES (Uses) (chromophore imaging agent; fluorene-based fluorophores for nondestructive multiphoton fluorescence imaging of polymeric materials)
 RN 289892-09-7 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-bis(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



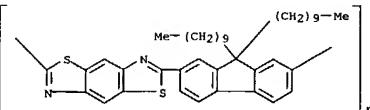
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 19 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2003:381432 CAPLUS
 DOCUMENT NUMBER: 138:330868
 TITLE: Maleic anhydride-modified polymers for two-photon upconverted fluorescence
 AUTHOR(S): Belfield, Kevin D.; Andrasik, Stephen; Schafer, Katherine J.; Yavuz, Ozlem; Hales, Joel M.; Van Stryland, Eric W.
 CORPORATE SOURCE: Dep. of Chem., Univ. of Central Florida, Orlando, FL, 32816, USA
 SOURCE: Polymeric Materials Science and Engineering (2001), 84, 732-733
 CODEN: PMSEDG; ISSN: 0743-0515
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Simultaneous two-photon absorption is a process in which the probability of a ground to excited state transition scales quadratically with incident intensity of the irradiation source. This nonlinear or quadratic dependence makes two-photon excitation particularly attractive for use in a number of emerging technologies, including two-photon fluorescence imaging, three-dimensional micro-fabrication, and optical power limiting. We wish to report the synthesis and photophys. characterization of polymers bearing chromophores that exhibit high two-photon absorptivity. Polymers derived from copolymer with maleic anhydride or through grafting of maleic anhydride were modified with primary amine-containing two-photon fluorophores, affording the corresponding imides. Photophys. properties including, linear absorption, excited state lifetime, single photon fluorescence, and two-photon upconverted fluorescence emission spectra are reported.
 IT 262607-30-7P, 7-(2-Benzothiazolyl)-9,9-didecyl-2-fluorenylamine
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (benzothiazolyl fluorenylamine-modified polymers for two-photon upconverted fluorescence)
 RN 262607-30-7 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl- (9CI) (CA INDEX NAME)



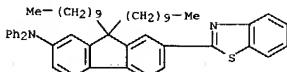
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 20 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2003:381184 CAPLUS
 DOCUMENT NUMBER: 138:354537
 TITLE: Luminescence and multiphoton absorption of a new class of bisbenzothiazole polymer
 AUTHOR(S): Belfield, Kevin D.; Morales, Alma; Yavuz, Ozlem; Stegeman, George I.; Chapela, Victor M.; Percino, Judith
 CORPORATE SOURCE: Department of Chemistry and School of Optics, University of Central Florida, Orlando, FL, 32816, USA
 SOURCE: Polymeric Materials Science and Engineering (2001), 84, 660-661
 CODEN: PMSEDG; ISSN: 0743-0515
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The ease of synthesis, high two-photon absorptivity, and fluorescence properties makes fluorenyl bisbenzothiazole polymer a good candidate for optical power limiting and two-photon fluorescence imaging. Thus, 2,7-dicyano-9,9-didecylfluorene (0.0014 mol, preparation given), 2,5-diamino-1,4-benzenedithiol dihydrochloride (0.0014 mol), and polyphosphoric acid (3.75 g) were stirred, flushed with N (g), heated to 45° under vacuum, stirred for 16 h, the temperature gradually raised to 60° for 4 h, and 100° for 2 h, resulting in the reaction mixture turning orange, cooled to room temperature and 1.83 g P205 was added, the solution was then slowly heated to 100° and stirred for 16 h (reddish-orange solution), followed by heating to 130° for another 16 h, then at 145° for 6 h, cooled in water, neutralized with NH4OH (20%) and washed with water in a soxhlet extractor for 32 h to give polymer which was dried and again washed with hexane, yielding a yellow solid (0.49 g, yield 53%).
 IT 518357-48-7P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (luminescence and multiphoton absorption of fluorenyl bisbenzothiazole polymer)
 RN 518357-48-7 CAPLUS
 CN Poly[benzo[1,2-d:4,5-d']bis[1,3-thiadiazole-2,6-diyl](9,9-didecyl-9H-fluorene-2,7-diyl)] (9CI) (CA INDEX NAME)



REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 21 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2003:293006 CAPLUS
 DOCUMENT NUMBER: 139:36200
 TITLE: Chemical structure/nonlinear optical property relations for fluorenyl ring system derivatives
 AUTHOR(S): Hales, J.; Schafer, K. J.; Morales, A. M.; Belfield, K. D.; Hagan, D. J.; Van Stryland, E. W.
 CORPORATE SOURCE: School of Optics/CREOL, University of Central Florida, Orlando, FL, 32816-2700, USA
 SOURCE: Trends in Optics and Photonics (2002), 79(Nonlinear Optics), 369-371
 CODEN: TOPRBS
 PUBLISHER: Optical Society of America
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB We present initial work involving chemical-structure/nonlinear-optical (NLO) property relations for set of fluorene derivs. This is achievable using our femtosecond white-light continuum pump-probe nonlinear spectrometer which can rapidly characterize a sample's two-photon absorption spectrum.
 IT 262607-32-9
 RL: PRP (Properties) (chemical structure-nonlinear optical property relations for fluorenyl ring system derivs.)
 RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



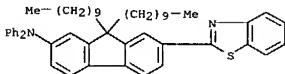
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 22 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:924150 CAPLUS
 DOCUMENT NUMBER: 138:287182
 TITLE: Steady-State Spectroscopic and Fluorescence Lifetime Measurements of New Two-Photon Absorbing Fluorene Derivatives
 AUTHOR(S): Belfield, Kevin D.; Bondar, Mikhailo V.; Przhonska, Olga V.; Schafer, Katherine J.
 CORPORATE SOURCE: Department of Chemistry, University of Central Florida, Orlando, FL, USA
 SOURCE: Journal of Fluorescence (2002), 12(3/4), 449-454
 PUBLISHER: Kluwer Academic/Plenum Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Steady-state excitation anisotropy, lifetimes, and time-resolved emission spectra of new 2-photon absorbing fluorene derivs. [7-benzothiazol-2-yl-9,9-didecylfluor-2-yl]diphenylamine, 9,9-didecyl-2,7-bis(N,N-diphenylamino)fluorene, and [4-[2-(7-diphenylamino)-9,9-diethylfluor-2-yl]-vinyl]phenylphosphoric acid di-Et ester] were measured in aprotic solvents at room temperature. Excitation anisotropy spectra in viscous silicon oil allowed the determination of the spectral position of three electronic transitions S0 S1, S0 S2, S0 S3 (S_i, i = 1, 2, 3 are the singlet electronic states) and the angles (simerg. 30°) between absorption S0 S1 and emission S1 S0 dipole moments for the first electronic transition. Solvate relaxation processes in the first excited state of the investigated fluorene mols. affect the lifetimes of these states, τ₁, so that ext. values of τ₁ do not correspond to those calculated by Strickler and Berg theory. The influence of the mol. concentration on the fluorescence quantum yields and τ₁ have been investigated.

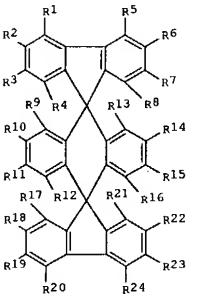
IT 262607-32-9
 RL: PRP (Properties)
 (steady-state spectroscopic and fluorescence lifetime measurements of new two-photon absorbing fluorene derivs.)

RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI)
 (CA INDEX NAME)



REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

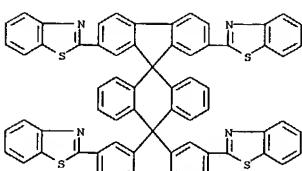
L3 ANSWER 23 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



AB Double-spiro organic compds. are claimed which are described by the general formula I (R1-24 = independently selected substituents not all of which are H). Light-emitting, hole-transporting, and electron-transporting materials comprising the compds. are also described. Electroluminescent materials comprising the compds., including deposited films, methods for depositing the materials, and organic electroluminescent devices employing the materials, and method for fabricating the devices, are also described.

IT 474688-44-3 474688-46-5
 RL: DEV (Device component use); USES (Uses)
 (double-spiro organic compds. and electroluminescent devices using them)

RN 474688-44-3 CAPLUS
 CN Benzothiophene, 2,2',2'',2'''-dispiro[9H-fluorene-9,9'-(10'H)-anthracene-10',9''-[9H]fluorene]-2,2'',7,7'''-tetracyclotetraakis- (9CI) (CA INDEX NAME)

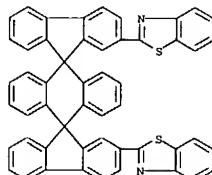


L3 ANSWER 23 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:849756 CAPLUS
 DOCUMENT NUMBER: 137:360139
 TITLE: Double-spiro organic compounds and electroluminescent devices
 INVENTOR(S): Kim, Kong-Kyeum; Son, Se-Hwan; Yoon, Seok-Hee; Bae, Jae-Soo; Lee, Youn-Gu; Im, Sung-Gap; Kim, Ji-Eun; Lee, Jae-Chol
 PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea
 SOURCE: PCT Int. Appl., 117 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002088274	A1	20021107	WO 2002-KR458	20020318
W: CN, JP RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
KR 2002083614	A	20021104	KR 2001-23038	20010427
KR 2002083615	A	20021104	KR 2001-23039	20010427
US 2004023060	A1	20040205	US 2002-99781	20020314
EP 1294823	A1	20030326	EP 2002-70589	20020318
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2004529937	T2	20040930	JP 2002-585559	20020318
US 2004170863	A1	20040902	US 2003-718083	20031119
PRIORITY APPN. INFO.:			KR 2001-23038	A 20010427
			KR 2001-23039	A 20010427
			US 2002-99781	A3 20020314
			WO 2002-KR458	W 20020318

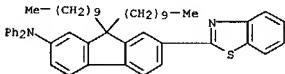
OTHER SOURCE(S): MARPAT 137:360139
 GI

L3 ANSWER 23 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 RN 474688-46-5 CAPLUS
 CN Benzothiophene, 2,2'-dispiro[9H-fluorene-9,9'-(10'H)-anthracene-10',9''-[9H]fluorene]-2,2'',7,7'''-tetracyclotetraakis- (9CI) (CA INDEX NAME)



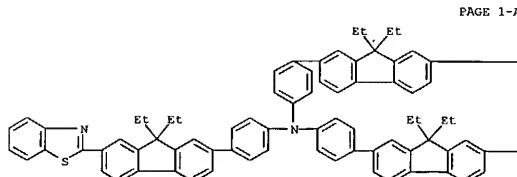
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 24 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:673937 CAPLUS
 DOCUMENT NUMBER: 137:359662
 TITLE: Experiment and analysis of two-photon absorption spectroscopy using a white-light continuum probe
 AUTHOR(S): Negres, Raluca A.; Hales, Joel M.; Kobyakov, Andrey;
 Hagan, David J.; Van Stryland, Eric W.
 CORPORATE SOURCE: School of Optics/CREOL, University of Central Florida,
 Orlando, FL, 32816-2700, USA
 SOURCE: IEEE Journal of Quantum Electronics (2002), 38(9), 1205-1216
 CODEN: IEJQA7; ISSN: 0018-9197
 PUBLISHER: Institute of Electrical and Electronics Engineers
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The authors present an exptl. technique along with the method of data anal. to give nondegenerate 2-photon absorption (2PA) spectra. The authors use a femtosecond pump pulse and a white-light continuum (WLC) probe to rapidly generate the 2PA spectra of a variety of materials. To analyze data taken with this method, the spectral and temporal characteristics of the WLC must be known, along with the linear dispersion of the sample. This allows determination of the temporal walk-off of the pump and probe pulses as a function of frequency caused by group-velocity mismatch. Data correction can then be performed to obtain the nonlinear losses. The authors derive an anal. formula for the normalized nonlinear transmittance that is valid under quite general exptl. parameters. The authors verify this on ZnS and use it for the determination of 2PA spectra of some organic compds. in solution. The authors also compare some of the data on orgs. with 2-photon fluorescence data and find good agreement.
 IT 262607-32-9
 RL: PRP (Properties)
 (two-photon absorption spectroscopy using white-light continuum probe in relation to electrooptical Kerr effect)
 RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



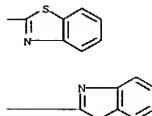
REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 25 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:647374 CAPLUS
 DOCUMENT NUMBER: 138:106347
 TITLE: Synthesis of C60-diphenylaminofluorene dyad with large 2PA cross-sections and efficient intramolecular two-photon energy transfer
 AUTHOR(S): Chiang, Long Y.; Padmawar, Prashant A.; Canteenwala, Taizoon; Tan, Loon-Seng; He, Guang S.; Kannan, Ramamurthi; Vaja, Richard; Lin, Tzu-Chau; Zheng, Qingdong; Prasad, Paras N.
 CORPORATE SOURCE: Institute of Nanoscience and Engineering, Department of Chemistry, University of Massachusetts Lowell, Lowell, MA, 01854, USA
 SOURCE: Chemical Communications (Cambridge, United Kingdom) (2002), (17), 1854-1855
 CODEN: CHCOFS ISSN: 1359-7345
 PUBLISHER: Royal Society of Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 138:106347
 AB The first, highly two-photon active C60 derivative comprised of a A-sp3-D conjugate structure was synthesized showing effective two-photon absorption cross-sections ($\omega^2 = 196 + 10-48 \text{ cm}^4 \text{ sec}^{-1} \text{ mol}^{-1}$) in the nanosecond regime among the best values for diphenylaminofluorene-based ADF chromophores.
 IT 267667-11-8 AF 350 487017-31-2, AF 284
 RL: PRP (Properties)
 (2PA cross-section; synthesis of C60-diphenylaminofluorene dyad with large 2PA cross-sections and efficient intramolecular two-photon energy transfer)
 RN 267667-11-8 CAPLUS
 CN Benzenamine, 4-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-N,N-bis[4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)phenyl]- (9CI) (CA INDEX NAME)

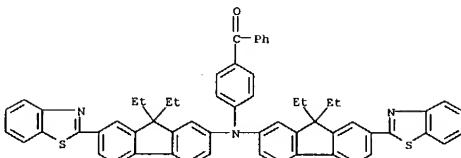


L3 ANSWER 25 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

PAGE 1-B

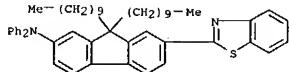


RN 487017-31-2 CAPLUS
 CN Methanone, 14-[bis[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]aminophenyl]phenyl- (9CI) (CA INDEX NAME)



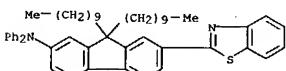
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 26 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:626738 CAPLUS
 DOCUMENT NUMBER: 137:391001
 TITLE: Two-photon induced modulation of optical properties
 in polymers for photonic applications
 AUTHOR(S): Belfield, Kevin D.; Liu, Yong; Schafer, Katherine J.; Hernandez, Florencio E.
 CORPORATE SOURCE: Department of Chemistry and School of Optics/CREOL, University of Central Florida, Orlando, FL, 32816-2366, USA
 SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 503-504
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry
 DOCUMENT TYPE: Journal; (computer optical disk)
 LANGUAGE: English
 AB The modulation of optical properties via photoacid generation (and subsequent protonation of a two-photon absorbing dye) and photochromism of a fulgide derivative is reported. The kinetic rate constant for the two-photon induced isomerization reaction of a fulgide was measured at two different intensities (two different powers), showing a quadratic dependence with respect to the pump intensity. The modulation of optical absorption and fluorescence properties were exploited in a polymeric medium where image formation via photoinduced fluorescence changes containing a two-photon absorbing fluorescent dye was demonstrated. Two-channel, two-photon fluorescence imaging provided both "pos." and "neg." image readout capability.
 IT 421546-27-2
 RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); FORM (Formation, nonpreparative); PROC (Process)
 (two-photon induced modulation of optical properties in polymers for photonic applications)
 RN 421546-27-2 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl-conjugate monoacid (9CI) (CA INDEX NAME)

● H⁺

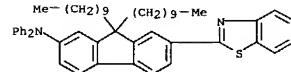
IT 262607-32-9

L3 ANSWER 27 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2002:572146 CAPLUS
 DOCUMENT NUMBER: 137:270333
 TITLE: A New Photosensitive Polymeric Material for WORM Optical Data Storage Using Multichannel Two-Photon Fluorescence Readout
 AUTHOR(S): Belfield, Kevin D.; Schafer, Katherine J.
 CORPORATE SOURCE: Department of Chemistry and School of Optics/CREOL, University of Central Florida, Orlando, FL, 32816-2366, USA
 SOURCE: Chemistry of Materials (2002), 14(9), 3656-3662
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Image formation is reported via photoinduced fluorescence changes in a polymeric medium with nondestructive two-photon fluorescence readout of a multilayer structure. A two-photon absorbing fluorescent dye possessing functional groups with different basicity, (7-benzothiazolyl-9,9-didecyl-2,2-(N,N-diphenylamino)fluorene) (1), underwent protonation in the presence of a photoinduced acid generator upon exposure to a broadband UV light source or femtosecond near-IR laser irradiation. Solution studies demonstrated formation of monoprotonated and diprotonated species upon irradiation, each resulting in distinctly different absorption and fluorescence properties. The fluorescence of the original, neutral fluorophore was reduced upon monoprotonation, leading to a concomitant increase in fluorescence at longer wavelengths due to the monoprotonated form. Expts. in polymer films demonstrate the changes in fluorescence properties of the fluorophores can be employed for a write-once read-many (WORM) data storage medium with a two-photon fluorescence readout. Two-channel, two-photon fluorescence imaging provided both "pos." and "neg." image readout capability.
 IT 421546-27-2 421546-28-3
 RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); FORM (Formation, nonpreparative); PROC (Process)
 (photosensitive polymeric material for optical data storage using multichannel two-photon fluorescence readout)
 RN 421546-27-2 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl-conjugate monoacid (9CI) (CA INDEX NAME)

● H⁺

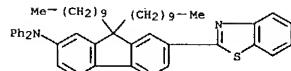
RN 421546-28-3 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl-conjugate diacid (9CI) (CA INDEX NAME)

L3 ANSWER 26 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
 (two-photon induced modulation of optical properties in polymers for photonic applications)
 RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

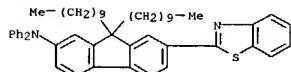


REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 27 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

● 2 H⁺

IT 262607-32-9
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
 (photosensitive polymeric material for optical data storage using multichannel two-photon fluorescence readout)
 RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 28 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:542661 CAPLUS

DOCUMENT NUMBER: 137:360216

TITLE: Photophysical characterization of 2,9-bis(7-benzothiazole-9,9'-didecylfluoren-2-yl)perylene diimide: a new standard for steady-state fluorescence anisotropy

AUTHOR(S): Belfield, Kevin D.; Bondar, Mikhailo V.; Przhonska, Olga V.; Schafer, Katherine J.

CORPORATE SOURCE: Department of Chemistry and CREOL, University of Central Florida, School of Optics, Orlando, FL, 32816-2366, USA

SOURCE: Journal of Photochemistry and Photobiology, A: Chemistry (2002), 151(1-3), 7-11

CODEN: JPCEJ3; ISSN: 1010-6030

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The absorption, fluorescence excitation and emission spectra have been obtained in solution for 2,9-bis(7-benzothiazole-9,9'-didecylfluoren-2-yl)perylene diimide. Efficient resonance energy transfer from the fluorene group to the perylene ring center was observed. Interestingly, fluorescence emission was detected from the second excited electronic state of the perylene ring system. Fluorescence excitation anisotropy spectra obtained at room temperature exhibited a parallel orientation of

the main absorption and emission band transition moments for the perylene-based dye in CH₂Cl₂. The value of excitation fluorescence anisotropy for the perylene dye in solution approached the theor.

maximum limit (r=0.4), and indicated that the rotational correlation time exceeded the lifetime of the first excited state. These results provide the basis for using this unique compound as an anisotropy reference standard

IT 280768-22-1

RL: PRP (Properties) (photophys. characterization of perylene diimide derivative in relation to fluorescence anisotropy)

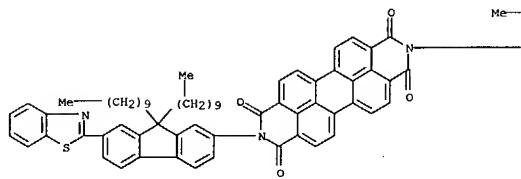
RN 280768-22-1 CAPLUS

CN Anthra[2,1,9-def:6,5,10-d'e'f']diisoquinoline-1,3,8,10(2H,9H)-tetrone, 2,9-bis(7-(2-benzothiazolyl)-9,9-didecyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)

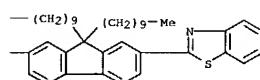
L3 ANSWER 28 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

PAGE 1-A

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PAGE 1-B



REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 29 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:372749 CAPLUS

DOCUMENT NUMBER: 137:176417

TITLE: Spectral properties of several fluorene derivatives with potential as two-photon fluorescent dyes

AUTHOR(S): Belfield, K. D.; Bondar, M. V.; Przhonska, O. V.; Schafer, K. J.; Mourad, W.

CORPORATE SOURCE: Department of Chemistry and CREOL/School of Optics, University of Central Florida, Orlando, FL, 32816-2366, USA

SOURCE: Journal of Luminescence (2002), 97(2), 141-146

CODEN: JLMAB; ISSN: 0022-2313

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Investigations of the absorption, steady-state fluorescence, excitation and excitation anisotropy properties of several fluorene derivs., (7-benzothiazol-2-yl-9,9-didecylfluoren-2-yl)-diphenylamine, 9,9-didecyl-2,7-bis-(N,N-diphenylamino)fluorene and (4-(2-(7-diphenylamino-9,9-diethylfluoren-2-yl)vinyl)phenyl)phosphoric acid di-Et ester, in liquid solns. have been conducted. Spectral characteristics of these compds., including fluorescence quantum yields, were measured in acetonitrile, methylene chloride, THF and hexane at room temperature. Excitation spectra provided a means to determine the nature of the short wavelength absorption bands as an electronic transition into a higher excited singlet state. It was found that excitation spectra in the short wavelength region do not correspond to the absorption bands that are correlated with the wavelength dependence of the fluorescence quantum yields. Major reasons of such spectral behavior are discussed.

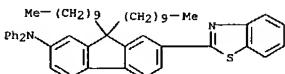
IT 262607-32-9

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PVP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(UV-visible absorption, fluorescence, excitation anisotropy and excitation spectra of fluorene derivs. with potential as two-photon fluorescent dyes in solvents of varying polarity)

RN 262607-32-9 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 30 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:229713 CAPLUS

DOCUMENT NUMBER: 136:377354

TITLE: Modulation of optical properties in new photosensitive

AUTHOR(S): Belfield, Kevin D.; Schafer, Katherine J. Dep. Chem. Sch. Optics/CREOL, Univ. Central Florida, Orlando, FL, 32816-2366, USA

CORPORATE SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer

SOURCE: of Polymer Chemistry) (2002), 43(1), 161-162

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB The results of the photoinduced protonation of fluorene dye in liquid solution

and polymer thin films, and the subsequent 3-dimensional imaging of multilayer polymer films via 2-photon fluorescence imaging, resulting in

a write-once, read-many (WORM) optical data storage system, are presented. All solution studies were conducted in CH₂Cl₂. A 2-photon absorbing fluorescent dye possessing differentially basic functional groups underwent protonation in the presence of a photoinduced acid generator.

Solution studies showed formation of discrete species upon irradiation,

each leading to distinctly different spectroscopic properties. The modulation of optical absorption and fluorescence properties were exploited in a polymeric medium where image formation via photoinduced fluorescence changes containing a 2-photon absorbing fluorescent dye was shown. Two-channel, 2-photon fluorescence imaging provided both pos. and neg. image readout capability. The signal readout established the possibility for a binary optical data storage medium, where the intensities can be designated as a 0 and 1.

IT 262607-32-9

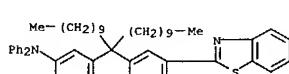
RL: PEP (Physical, engineering or chemical process); PVP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(modulation of optical properties in new 3-D optical data storage media

of photosensitive polymers)

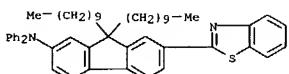
RN 262607-32-9 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

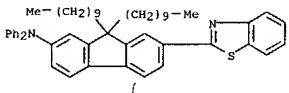
IT 421546-27-2 421546-28-3
RL: PEP (Physical, engineering or chemical process); PVP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(modulation of optical properties in new 3-D optical data storage

L3 ANSWER 30 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 of photosensitive polymers)
 RN 421546-27-2 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl-, conjugate monoacid (9CI) (CA INDEX NAME)

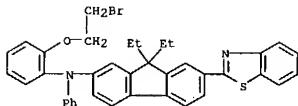
● H⁺

RN 421546-28-3 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl-, conjugate diacid (9CI) (CA INDEX NAME)

● 2 H⁺

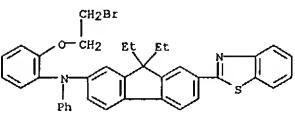
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 31 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 1H-pyrazole-based 6F-benzoxazole polymers incorporating a two-photon absorption chromophore
 AUTHOR(S): Dang, T. D.; Matuszewski, M. J.; Dalton, M. J.; Kannan, R.; Franklin, J. E.; Durstock, M. F.; Tan, L. S.; Arnold, F. E.
 CORPORATE SOURCE: Polymer Branch, AFRL/MILPB, Wright-Patterson Air Force Base, Dayton, OH, 45433, USA
 SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(1), 102-103
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry
 DOCUMENT TYPE: Journal: (computer optical disk)
 LANGUAGE: English
 AB A homopolymer and a copolymer of 1H-pyrazole-based 6F-benzoxazole incorporating a diphenylaminofluorene-based chromophore with high two-photon absorption cross-section was synthesized via a post-polymer deprotonation-alkylation step. Thermal characterization of the polymer-bound chromophore indicated a substantial lowering of the polymer T_g due to the side-chain chromophore structural unit on the polymer backbone. The electronic absorption of the polymer, polymer-bound chromophore, and the pristine chromophore in THF solution and in the solid state was studied. The UV absorption stability of the chromophore and the polymer-bound chromophore films in nitrogen and in air was also studied.
 IT 433971-77-8P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (chromophore, AF-343; preparation and UV absorption stability of 1H-pyrazole-hexafluorobenzoxazole functionalized with two-photon absorption diphenylaminofluorene chromophore)
 RN 433971-77-8 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N-[2-(2-bromoethoxy)phenyl]-9,9-diethyl-N-phenyl- (9CI) (CA INDEX NAME)



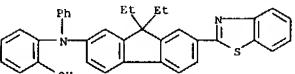
IT 433971-77-8P, reaction products with pyrazole-hexafluorobenzoxazole polymers
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (chromophore-functionalized: preparation and UV absorption stability of

L3 ANSWER 31 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 1H-pyrazole-hexafluorobenzoxazole functionalized with two-photon absorption diphenylaminofluorene chromophore)
 RN 433971-77-8 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N-[2-(2-bromoethoxy)phenyl]-9,9-diethyl-N-phenyl- (9CI) (CA INDEX NAME)



IT 433971-76-7
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation and UV absorption stability of 1H-pyrazole-hexafluorobenzoxazole functionalized with two-photon absorption diphenylaminofluorene chromophore)
 RN 433971-76-7 CAPLUS
 CN Phenol,
 2-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]phenylamino-

(9CI) (CA INDEX NAME)



REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

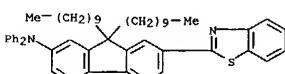
L3 ANSWER 32 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 1H-pyrazole-hexafluorobenzoxazole polymers
 TITLE: Three-dimensional two-photon imaging in polymeric materials
 AUTHOR(S): Belfield, Kevin D.; Schafer, Katherine J.; Andrasik, Stephen; Yavuz, Ozlem; Van Stryland, Eric W.; Hagan, David J.; Hales, Joel M.
 CORPORATE SOURCE: Department of Chemistry, University of Central Florida, Orlando, FL, 32816-2366, USA
 SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2002), 4459(Photorefractive Fiber

and Crystal Devices: Materials, Optical Properties, and Applications VII, and Optical Data Storage), 281-289
 PUBLISHER: SPIE-The International Society for Optical Engineering
 DOCUMENT TYPE: Journal
 LANGUAGE: English

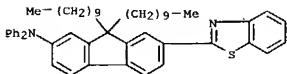
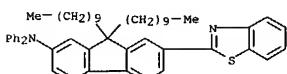
AB The authors report image formation via single and two-photon photoinduced fluorescence changes in a polymeric medium with two-photon fluorescence read-out of multilayer structures. Photoinduced acid generation in the presence of a two-photon fluorescent dye possessing strongly basic functional groups 7-benzothiazolyl-9,9-didecyl-2,2-(N,N-diphenylamino)fluorene underwent protonation upon exposure with UV or near-IR (740 nm fs pulses). Solution studies demonstrate formation of monoprotonated and diprotonated species upon irradiation, each resulting

in distinctly different absorption and fluorescence properties. The fluorescence of the original, neutral, fluorophore is quenched upon monoprotonation with a concomitant increase in fluorescence at longer wavelengths due to the monoprotonated form. Hence, two channel two-photon fluorescence imaging provides 'pos.' or 'neg.' image readout capability. Results of solution and solid polymer thin films expts. are presented.

IT 421546-27-2 421546-27-3
 RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); FORM (Formation, nonpreparative); PROC (Process)
 (protonation of two-photon absorbing fluorescent dye and its application for 3D imaging in polymeric film containing onium salt photoacid generator)
 RN 421546-27-2 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl-, conjugate monoacid (9CI) (CA INDEX NAME)

● H⁺

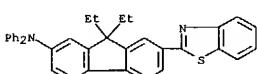
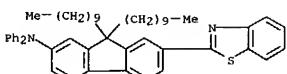
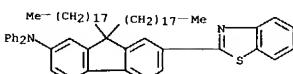
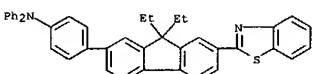
L3 ANSWER 32 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

RN 421546-28-3 CAPLUS
CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl-, conjugate diacid (9CI) (CA INDEX NAME)●2 H⁺IT 262607-32-9
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(protonation of two-photon absorbing fluorescent dye and its
application for 3D imaging in polymeric film containing onium salt
photoacid generator)
RN 262607-32-9 CAPLUS
CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI)
(CA INDEX NAME)REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMATL3 ANSWER 33 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:923862 CAPLUS
DOCUMENT NUMBER: 136:54238
TITLE: Multiphoton photosensitization system
INVENTOR(S): Devos, Robert J.
PATENT ASSIGNEE(S): 3M Innovative Properties Company, USA
SOURCE: PCT Int. Appl., 66 pp.
CODEN: PIXX02
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

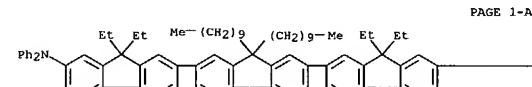
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001096409	A2	20011220	WO 2001-US19164	20010614
WO 2001096409	A3	20020404		
	W: AB, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, C2, C3, DE, DE, DK, DK, DM, DZ, EC, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SI, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZB, ZW, AM, A2, BY, KG, KZ, MD, RU, TJ RW: GH, GM, KE, LS, MW, MZ, SD, SI, SZ, TZ, US, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BZ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	EP 1297021	A2	20030402	EP 2001-946384 20010614
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CX, AL, TR			
	JP 2004503616	T2	20040205	JP 2002-510544 20010614
	PRIORITY APPLN. INFO.:			US 2000-211703P P 20000615
				WO 2001-US19164 W 20010614

OTHER SOURCE(S): MARPAT 136:54238
AB A method of multiphoton photosensitizing a photoreactive composition
comprises
irradiating the composition with light sufficient to cause simultaneous
absorption of at least two photons, thereby inducing at least one acid-
or
radical-initiated chemical reaction where the composition is exposed to
the light.
The composition comprises: (a) at least one reactive species that
capable of
undergoing such reaction; and (b) at least one multi-component,
multiphoton photoinitiator system.
IT 219998-27-3 222617-85-8 262607-32-9
287493-05-4 287493-07-6 287493-08-7
RL: CAT (Catalyst use); USES (Uses)
(multiphoton photosensitization system)
RN 219998-27-3 CAPLUS
CN [2,2'-Bi-9H-fluoren]-7-amine, 7'-(2-benzothiazolyl)-9,9',9''-tetraethyl-
N,N-diphenyl- (9CI) (CA INDEX NAME)

L3 ANSWER 33 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

RN 222617-85-8 CAPLUS
CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI)
(CA INDEX NAME)RN 262607-32-9 CAPLUS
CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI)
(CA INDEX NAME)RN 287493-05-4 CAPLUS
CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-dioctadecyl-N,N-diphenyl-
(9CI) (CA INDEX NAME)RN 287493-07-6 CAPLUS
CN Benzenamine, 4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)-N,N-
diphenyl- (9CI) (CA INDEX NAME)RN 287493-08-7 CAPLUS
CN [2,2'-7,2''-Ter-9H-fluoren]-7-amine,
7''-(2-benzothiazolyl)-9',9''-didecyl-
9,9',9''-tetraethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

L3 ANSWER 33 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



PAGE 1-A

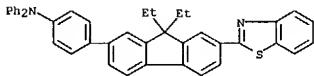


PAGE 1-B

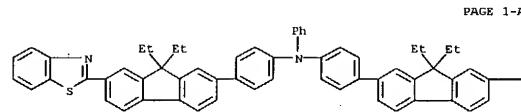
L3 ANSWER 34 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:744647 CAPLUS
 DOCUMENT NUMBER: 135:290148
 TITLE: Multi-armed chromophores with very large two-photon absorption cross-sections
 INVENTOR(S): Kannan, Ramamurthi; Reinhardt, Bruce A.; Tan, Loon-seng
 PATENT ASSIGNEE(S): United States of America as Represented by the Secretary of the Air Force, USA
 SOURCE: U.S., 10 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6300502	B1	20011009	US 2000-731549	20001208
PRIORITY APPLN. INFO.:		US 2000-731549 20001208		

OTHER SOURCE(S): MARPAT 135:290148
 AB Provided are chromophores with very large two-photon absorption cross-sections. One group of these chromophores has the formula (TQ)nPhm wherein Q is a single bond or 1,4-phenylene, n is 1-3, m is 3-n, and T is 9,9-dialkyl-7-(2-benzothiazolyl)-2-fluorenyl, provided that when Q is a single bond, the value of n is 2 or 3. Another group of these chromophores has the formula (TQ)nPhm wherein T is as defined above, Q is as defined above, n is 1-4, m is 4-n, and G is a 4-arm core unit. Yet another group of these chromophores has the formula: (TQ)nPhm wherein T is as described previously, Q is as defined above, n is 1-6, m is 6-n, and X is a 6-arm core unit. The production of these laser dyes was exemplified.
 IT 207493-07-6P
 RL: IMF (Industrial manufacture); PRP (Properties); RCT (Reactant); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses) (dye; production of multi-armed dyes with very large two-photon absorption cross sections)
 RN 287493-07-6 CAPLUS
 CN Benzenamine, 4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)-N,N-diphenyl- (9CI) (CA INDEX NAME)



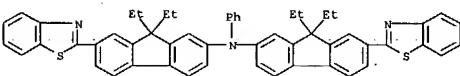
L3 ANSWER 34 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 RN 364635-66-5 CAPLUS
 CN Benzenamine,
 4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)-N-(4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)phenyl)-N-phenyl- (9CI) (CA INDEX NAME)



PAGE 1-B

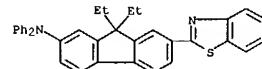


RN 364635-67-6 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-9,9-diethyl-N-phenyl- (9CI) (CA INDEX NAME)



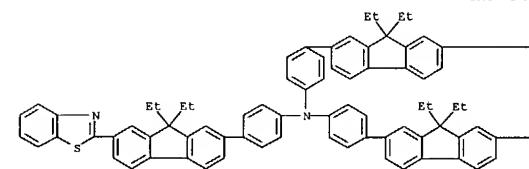
RN 364635-72-3 CAPLUS
 CN 9H-Fluoren-2-amine,
 7-(2-benzothiazolyl)-N,N-bis[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-9,9-diethyl- (9CI) (CA INDEX NAME)

L3 ANSWER 34 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 IT 222617-85-8P 267667-11-8P 364635-66-5P
 364635-67-6P 364635-72-3P
 RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (dye; production of multi-armed dyes with very large two-photon absorption cross sections)
 RN 222617-85-8 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

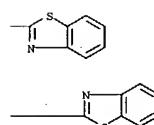


RN 267667-11-8 CAPLUS
 CN Benzenamine, 4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)-N,N-bis[4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)phenyl]- (9CI) (CA INDEX NAME)

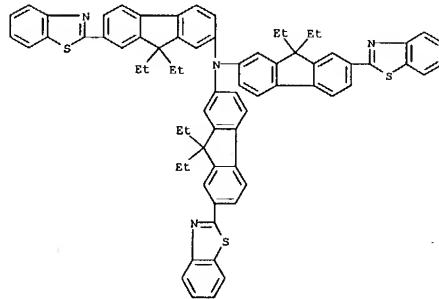
PAGE 1-A



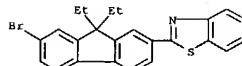
PAGE 1-B



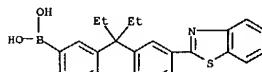
L3 ANSWER 34 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



IT 225113-41-7P 287493-09-8P 340300-53-0P
 364635-65-4P 364635-69-8P 364635-70-1P
 364635-71-2P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent) (intermediate; production of multi-armed dyes with very large two-photon absorption cross sections)
 RN 225113-41-7 CAPLUS
 CN Benzothiazole, 2-(7-bromo-9,9-diethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



RN 287493-09-8 CAPLUS
 CN Boronic acid, (7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)

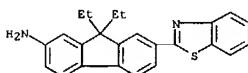


RN 340300-53-0 CAPLUS

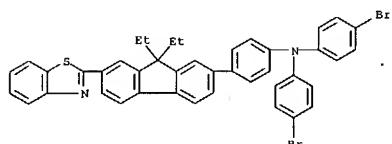
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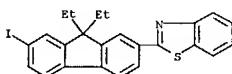
L3 ANSWER 34 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl- (9CI) (CA INDEX
NAME)



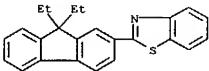
RN 364635-65-4 CAPLUS
CN Benzenamine, 4-[(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-N,N-bis(4-bromophenyl)- (9CI) (CA INDEX NAME)



RN 364635-69-8 CAPLUS
CN Benzothiazole, 2-(9,9-diethyl-7-iodo-9H-fluoren-2-yl)- (9CI) (CA INDEX
NAME)



RN 364635-70-1 CAPLUS
CN Benzothiazole, 2-(9,9-diethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



RN 364635-71-2 CAPLUS
CN Benzothiazole, 2-(9,9-diethyl-7-nitro-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)

L3 ANSWER 35 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001-380926 CAPLUS
DOCUMENT NUMBER: 134374112
TITLE: Three dimensional data storage device and method for
reading
INVENTOR(S): Prasad, Paras N.; Pudavar, Haridas E.
PATENT ASSIGNEE(S): The Research Foundation of State University of New
York, USA
SOURCE: PCT Int. Appl., 61 pp.
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001037266	AI	20010525	WO 2000-031666	20001117
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, LZ, LC, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MB, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TU, TM, TR, TT, TZ, UA, UG, UZ, UV, YU, ZA, ZW, MY, AZ, BY, KG, KZ, MD, RU, TU, TZ				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
PRIORITY APPLN. INFO.:			US 1999-165953P	F 19991117

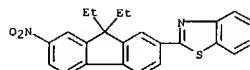
AB A method for reading a three-dimensional data storage device includes: a) providing a data storage medium constituting a three-dimensional matrix and a plurality of dye mols. dispersed therein, wherein the dye mols. are capable of a fluorescence change induced by multiple-photon excitation;

b)

inducing a fluorescence change of the dye by multiple-photon excitation under conditions effective to write an information code in a selected portion of the medium; c) inducing one-photon excitation in the fluorescence-changed dye; d) detecting a fluorescence emission in the one-photon excited dye portion; and e) correlating the fluorescence with the dye mols. contained in the selected portion that are detectably altered effective to retrieve the information code. The process can be repeated to write multiple layers of information. The data storage methods and media are particularly useful for storing or archiving a series of three-dimensional images or information in the form of bar codes, medical bracelets, and identification tags. Methods for reading data stored in the data storage media using confocal microscopy are also

disclosed.
IT 340300-53-0
RL: DEV (Device component use); USES (Uses)
(multi-photon absorbing dye in three dimensional matrix of data
storage
storage material)
RN 340300-53-0 CAPLUS
CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl- (9CI) (CA IN
NAME)

L3 ANSWER 34 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

L3 ANSWER 35 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 ACCESSION NUMBER: 2001:380926 CAPLUS
 DOCUMENT NUMBER: 134:374112
 TITLE: Three dimensional data storage device and method for reading
 INVENTOR(S): Prasad, Paras N.; Pudavar, Haridas E.
 PATENT ASSIGNEE(S): The Research Foundation of State University of New York, USA
 SOURCE: PCT Int. Appl., 61 pp.
 CODEN: PIIXXD2
 DOCUMENT TYPE: Patent

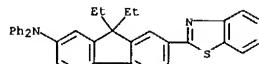
L3 ANSWER 35 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

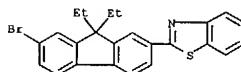


REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. 71 CITATIONS AVAILABLE IN THE RE

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

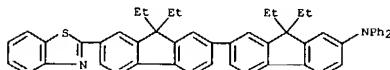
L3 ANSWER 36 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:298453 CAPLUS
 DOCUMENT NUMBER: 135:93912
 TITLE: Diphenylaminofluorene-Based Two-Photon-Absorbing Chromophores with Various π -Electron Acceptors
 AUTHOR(S): Kannan, Ramamurthi; He, Guang S.; Yuan, Lixiang; Xu, Faming; Prasad, Paras N.; Domroskie, Ann G.; Reinhardt, Bruce A.; Baur, Jeffery W.; Vaia, Richard A.; Tan, Loon-Seng
 CORPORATE SOURCE: Systran Systems Corporation, Dayton, OH, 45432, USA
 SOURCE: Chemistry of Materials (2001), 13(5), 1896-1904
 CODEN: CMATEX; ISSN: 0897-4756
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A new series of linear, asym. (diphenylamino)fluorene-based chromophores (AFX) with various strong π -electron acceptors were synthesized and evaluated for two-photon absorptivity. These chromophores were studied to determine a suitable replacement for 2-(4-pyridinyl)vinyl, the π acceptor for our previously reported AFX series, which contains a photochem. and thermooxidatively unstable olefinic unit. In addition to the benzoyl group (AF-370), these π -electron acceptors include 2-benzothiazolyl (AF-240), 2-benzoxazolyl (AF-390), N-phenyl-2-benzimidazolyl (AF-386), and 3,4-diphenyl-1H-imidazol-2-yl (AF-385) moieties (five-membered heterocycles) and the 2-quinoxaliny (AF-260) group (six-membered heterocycle). From nanosecond nonlinear transmission measurements, these new chromophores have effective two-photon cross sections (σ^2) at 800 nm spanning from 3.87×10^{-48} cm 4 s/(photon mol.) for AF-385 to 97.46×10^{-48} cm 4 s/(photon mol.) for AF-240. Two of them, AF-240 and AF-370 [$\sigma^2 = 84.32 \times 10^{-48}$ cm 4 s/(photon mol.)], stand out as having relatively good, albeit lower, values of two-photon cross sections, as compared to that of previously reported N-diphenyl-7-[2-(4-pyridinyl)ethyl]-9,9-didecyl-2-fluorenamine (AF-50) [$\sigma^2 = 115.6 \times 10^{-48}$ cm 4 s/(photon mol.)]. However, we observed that AF-240 was more photochem. robust than AF-50 when their THF solns. were subjected to repetitive and prolonged exposure to nanosecond laser radiation. On the basis of nanosecond TPA cross-section data (σ^2 /mol. weight values), the general trend for π -electron accepting ability, i.e., ability to accept charge transferred from diphenylamine, appears to be as follows: 2-(4-pyridinyl)vinyl > 2-benzothiazolyl > benzoyl > N-phenyl-2-benzimidazolyl > 2-quinoxaliny > 2-benzoxazolyl > 4,5-diphenyl-2-imidazolyl.
 IT 222617-85-8P, AF 240
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation of (diphenylamino)fluorene-based two-photon-absorbing chromophores with various π -electron acceptors)
 RN 222617-85-8 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

L3 ANSWER 36 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 Ph₂N

 IT 225113-41-7P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (preparation of (diphenylamino)fluorene-based two-photon-absorbing chromophores with various π -electron acceptors)
 RN 225113-41-7 CAPLUS
 CN Benzothiazole, 2-(7-bromo-9,9-diethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 37 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2001:193249 CAPLUS
 DOCUMENT NUMBER: 135:211388
 TITLE: Two-photon absorption induced photopolymerization
 AUTHOR(S): Denny, Lisa R.; Baur, Jeffery W.; Alexander, Max D., Jr.; Kannan, Ramamurthi; Kirkpatrick, Sean M.; Clarson, Stephen J.
 CORPORATE SOURCE: Air Force Research Laboratory (AFRL), AFRL/MLBP, Wright Patterson Air Force Base, OH, 45433-7750, USA
 SOURCE: International SAMPE Technical Conference (2000), 32, 712-716
 CODEN: ISTCEF; ISSN: 0892-2624
 PUBLISHER: Society for the Advancement of Material and Process Engineering
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Organic two-photon chromophores undergo a process called two-photon absorption in which light is absorbed in the IR wavelength range, which in turn can initiate photochem. using either the two-photon excited mol. or its up-converted fluorescence emission. One type of photochem. for which the two-photon up-conversion can be used is photopolymerization. Organic/polymeric materials often exhibit non-resonant linear absorption in the UV wavelength range, while in near IR (NIR) wavelengths little or no absorption is observed. As a result NIR light can penetrate much deeper into the organic materials to initiate photocuring throughout the resin. Thus, using this NIR photocure technique, it is possible to photocure objects thicker than those fabricated with traditional UV curing. Novel two-photon organic chromophores developed in the Air Force Research Laboratory (AFRL) and by other research groups exhibit large effective two-photon cross-section values, which provide efficient excited mol. states or localized UV/visible fluorescence required for photocure. The utilization of up-conversion photochem. processing provides a relatively new processing method for fabrication of structures ranging from precisely patterned nanostructures to thick structures (>1cm). This research evaluates the advantages and limitations of this new polymer processing technique and the critical factors influencing the reaction.
 IT 219998-27-3, AF 250
 RL: CAT (Catalyst use); USES (Uses) (chromophore; two-photon absorption induced photopolymer.)
 RN 219998-27-3 CAPLUS
 CN [2,2'-Bi-9H-fluoren]-7-amine, 7'-(2-benzothiazolyl)-9,9',9"-tetraethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 38 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:548729 CAPLUS

DOCUMENT NUMBER: 133:151989

TITLE: Benzothiazole-containing two-photon chromophores

exhibiting strong frequency upconversion

INVENTOR(S): Reinhardt, Bruce A.; Kannan, Ramamurthi

PATENT ASSIGNEE(S): United States Dept. of the Air Force, USA

SOURCE: U.S., 9 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6100405	A	20000808	US 1999-333304	19990615
PRIORITY APPLN. INFO.:			US 1999-127602P	P 19990316

OTHER SOURCE(S): MARPAT 133:151989

AB There are provided asym. two-photon-absorbing chromophores having large two-photon-absorbing cross sections and improved thermal and photochemical stability, of formula DArA wherein Ar is arenediyl, including fluorenyliyl; D is diarylamino; and A is selected from the group benzothiazolyl or benzoxazolyl optionally attached through an

E-ethenediyl

linkage. Thus,

9,9-diethyl-7-(diphenylamino)-2-(2-benzothiazolyl)fluorene was prepared from 7-bromo-9,9-diethyl-2-fluorenecarboxaldehyde by way of successive treatment with 2-aminothiophenol and diphenylamine.

IT 219998-27-3P 222617-85-8P 262607-32-9P

207493-05-4P 287493-07-6P 287493-08-7P

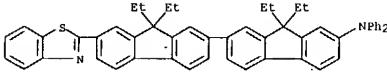
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(fluorescent dye; production of two-photon chromophores with improved heat

and light stability)

RN 219998-27-3 CAPLUS

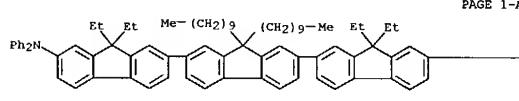
CN [2,2'-Bi-9H-fluoren]-7-amine, 7'-(2-benzothiazolyl)-9,9',9''-tetraethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



RN 222617-85-8 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

L3 ANSWER 38 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



PAGE 1-A



IT 225113-41-7P 287493-09-8P 287493-17-8P

287493-18-9P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation);

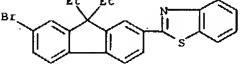
RACT (Reagent or reagent)

(intermediate; production of two-photon chromophores with improved heat and

light stability)

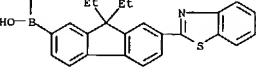
RN 225113-41-7 CAPLUS

CN Benzothiazole, 2-(7-bromo-9,9-diethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



RN 287493-09-8 CAPLUS

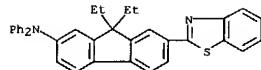
CN Boronic acid, [7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]- (9CI) (CA INDEX NAME)



RN 287493-17-8 CAPLUS

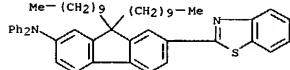
CN Benzothiazole, 2-[9,9-diethyl-7-(tributylstannyl)-9H-fluoren-2-yl]- (9CI) (CA INDEX NAME)

L3 ANSWER 38 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



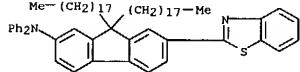
RN 262607-32-9 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



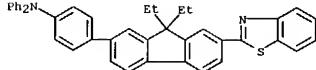
RN 287493-05-4 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-dioctadecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



RN 287493-07-6 CAPLUS

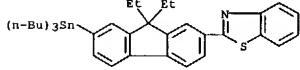
CN Benzenamine, 4-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-N,N-diphenyl- (9CI) (CA INDEX NAME)



RN 287493-08-7 CAPLUS

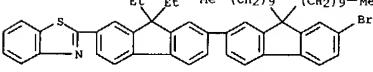
CN [2,2':7',2''-Ter-9H-fluoren]-7-amine, 7'-(2-benzothiazolyl)-9,9-didecyl-9,9,9'',9'''-tetraethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

L3 ANSWER 38 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



RN 287493-18-9 CAPLUS

CN Benzothiazole, 2-(7'-bromo-9',9''-didecyl-9,9-diethyl[2,2'-bi-9H-fluoren]-7-yl)- (9CI) (CA INDEX NAME)



REFERENCE COUNT:

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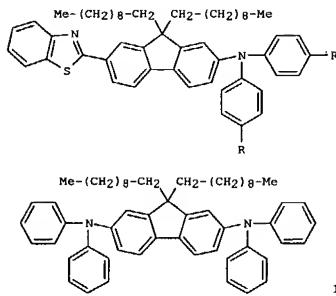
THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L3 ANSWER 39 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:425868 CAPLUS

DOCUMENT NUMBER: 133:207653

TITLE: Synthesis of new two-photon absorbing fluorene derivatives via Cu-mediated Ullmann condensations
 AUTHOR(S): Belfield, Kevin D.; Schafer, Katherine J.; Mourad, Wael; Reinhardt, Bruce A.
 CORPORATE SOURCE: Department of Chemistry, University of Central Florida, Orlando, FL, 32816-2366, USA
 SOURCE: Journal of Organic Chemistry (2000), 65(15), 4475-4481
 CODEN: JOCEAH; ISSN: 0022-3263
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 133:207653
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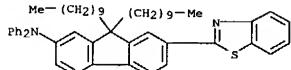
AB The Ullmann amination reaction was utilized to provide access to a number of fluorene analogs from common intermediates, via facile functionalization at positions 2, 7, and 9 of the fluorene ring. Through variation of amine or iodo fluorene derivative, analogs bearing substituents with varying electron-donating and electron-withdrawing ability, e.g., diphenylamino, bis(4-methoxyphenyl)amine, nitro, and benzothiazole, were synthesized in good yield. The novel fluorene derivs. were fully characterized, including absorption and emission spectra. Didecylation at the 9-position afforded remarkably soluble derivs. Target compds. I (R = H, MeO) and II are

L3 ANSWER 39 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 potentially useful as fluorophores in two-photon fluorescence microscopy. Their UV-vis spectra display desirable absorption in the range of interest

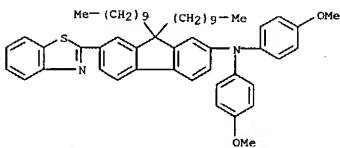
suitable for two-photon excitation by near-IR femtosecond lasers. Preliminary measurements of two-photon absorption indicate the derivs. exhibit high two-photon absorptivity, affirming their potential as two-photon fluorophores. For example, using a 1210 nm femtosecond pump beam, (diphenylamino)benzothiazolylfluorene I (R = H) exhibited nondegenerate two-photon absorption, with two-photon absorptivity (8) of ca. $820 \pm 10-50 \text{ cm}^4 \text{ photon}^{-1} \text{ mol}^{-1}$ at the femtosecond white light continuum probe wavelength of 615 nm.

IT 262607-32-9P 289892-09-7P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation of fluorene derivs. as two-photon fluorophores for fluorescence

microscopy via copper-mediated Ullmann aminations)
 RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

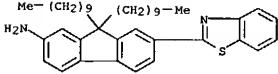


RN 289892-09-7 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-bis(4-methoxyphenyl)- (9CI) (CA INDEX NAME)

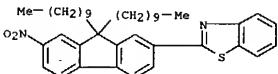


IT 262607-30-7P 262607-33-0P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (preparation of fluorene derivs. as two-photon fluorophores for fluorescence microscopy via copper-mediated Ullmann aminations)
 RN 262607-30-7 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl- (9CI) (CA INDEX NAME)

L3 ANSWER 39 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)



RN 262607-33-0 CAPLUS
 CN Benzothiazole, 2-(9,9-didecyl-7-nitro-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 40 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:312491 CAPLUS

DOCUMENT NUMBER: 133:90722

TITLE: Synthesis and characterization of a perylene-based luminescent organic glass

AUTHOR(S): Belfield, Kevin D.; Schafer, Katherine J.; Alexander, Max D. Jr.

CORPORATE SOURCE: Department of Chemistry, University of Central Florida, Orlando, FL, 32816-2366, USA

SOURCE: Chemistry of Materials (2000), 12(5), 1184-1186

PUBLISHER: CODEN: CNATEX; ISSN: 0897-4756

DOCUMENT TYPE: American Chemical Society

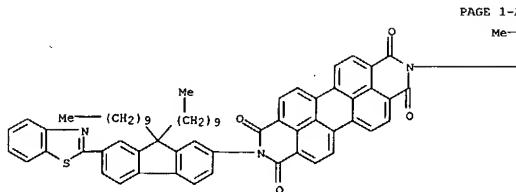
LANGUAGE: Journal

LNGUAE: English

AB The red dye N,N'-bis[7-(2-benzothiazolyl)-9,9-didecyl-2-fluorenyl]perylene tricarboxylic diimide (I) was prepared from perylenetetracarboxylic dianhydride and 7-(2-benzothiazolyl)-9,9-didecyl-2-fluorenylamine. Photoluminescence studies of I showed that it underwent intramol. energy transfer from the fluorenyl moiety to the perylene ring system upon excitation with long-wavelength UV light. I should provide broad band 2-photon absorption in the ranges of 600-770 and 820-1090 nm. I had no clear melting or crystallization transitions, while showing .apprx.4% weight loss at 380°. Good solubility was noted in common organic solvents.

IT 280768-22-1P
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (preparation and characterization of perylene-based luminescent organic glass)

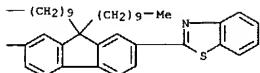
RN 280768-22-1 CAPLUS
 CN Anthra[2,1,9-def:6,5,10-d'e'f']diisoquinoline-1,3,8,10(2H,9H)-tetrone, 2,9-bis[7-(2-benzothiazolyl)-9,9-didecyl-9H-fluoren-2-yl]- (9CI) (CA INDEX NAME)



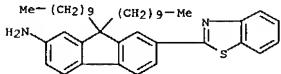
L3 ANSWER 40 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

(Continued)

PAGE 1-B



IT 262607-30-7, 7-(2-Benzothiazolyl)-9,9-didecyl-2-fluorenylamine
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; preparation and characterization of perylene-based
 luminescent organic glass)
 RN 262607-30-7 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl- (9CI) (CA INDEX
 NAME)



REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L3 ANSWER 41 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

2000:265904 CAPLUS

132:340824

TITLE: Two-Photon Excitation and Optical Spatial-Profile
 Reshaping via a Nonlinear Absorbing Medium
 He, Guang S.; Swiatkiewicz, Jacek; Jiang, Yan;

Paras N.; Reinhardt, Bruce A.; Tan, Loon-Seng;

Ramamurthi

Photonics Research Laboratory Department of

Chemistry, State University of New York at Buffalo, Buffalo, NY,
 14260-3000, USASOURCE: Journal of Physical Chemistry A (2000), 104(20),
 4805-4810

CODEN: JPCAFH; ISSN: 1089-5639

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Two-photon processes have recently received considerable attention, as they offer opportunities for both fundamental research and technology. The authors illustrate both of these opportunities by reporting on a study of 2-photon properties and discussing 1 specific application of a new chromophore, tris[4-(7-benzothiazol-2-yl)-9,9-didecylfluorophenyl]amine (AF-350). This new compound exhibits a large 2-photon absorptive cross section and, more importantly from the application point of view, a high photochemical/photothermal stability. The nonlinear optical properties of an AF-350 solution were studied with approx. 800-nm laser pulses in both nanosecond and femtosecond regimes. The 2-photon excited fluorescence spectrum and temporal behavior were compared with the corresponding results obtained for 1-photon excitation. There is an approx. 11-ps delay between an ultrashort pump pulse and the 1st peak of the 2-photon induced fluorescence signal, whereas no delay was

measured between the pump pulse and the 1st peak of the 1-photon induced fluorescence. The measured effective 2-photon absorption (TPA) cross section is $\sigma_2 = (151 \pm 23) + 10-20 \text{ cm}^4/\text{GW}$ for 7-ns, 810-nm laser pulses and $\sigma_2 = (0.61 \pm 0.02) + 10-20 \text{ cm}^4/\text{GW}$ for 135-fs, 796-nm laser pulses. One specific application reported here is the spatial-profile reshaping and smoothing of a focused laser field.

IT 267667-11-8

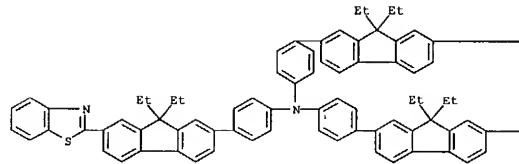
RL: PRP (Properties)
 (two-photon excitation and optical spatial-profile reshaping via
 nonlinear absorbing medium)

RN 267667-11-8 CAPLUS

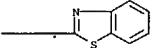
CN Benzeneamine, 4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)-N,N-bis[4-(7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl)phenyl]- (9CI) (CA INDEX NAME)

L3 ANSWER 41 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

PAGE 1-A



PAGE 1-B



REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L3 ANSWER 42 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

2000:208008 CAPLUS

132:334971

TITLE: Two-photon up-converted fluorescence facilitated
 photopolymerization

AUTHOR(S): Denny, Lisa R.; Baur, Jeffrey W.; Alexander, Max D., Jr.; Kirkpatrick, Sean M.; Clasen, Stephen J.

CORPORATE SOURCE: Air Force Research Laboratory (AFRL), AFRL/MILP, Wright Patterson Air Force Base, OH, 45433-7750, USA

SOURCE: Polymer Preprints (American Chemical Society, Division

of Polymer Chemistry) (2000), 41(1), 3

CODEN: ACPAPY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Several resin blends of 2 different two-photon chromophores were tested; these generate visible light at 475 nm, which in turn activates a photoinitiator to start the polymerization reaction. Pos. results were obtained

for 0.4% of a heteroarom.-substituted amine chromophore (AF380) in NOA-72,

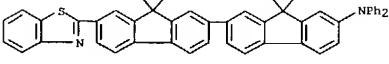
a com. available UV/VIS cure optical adhesive resin containing photoinitiators. Excitation was carried out with an IR laser, and the extent of polymerization in the path of the beam was studied.

IT 219998-27-3, AF 250

RL: CAT (Catalyst use); USES (Uses)
 (photopolym. facilitated by two-photon fluorescence chromophores as photoinitiator activators)

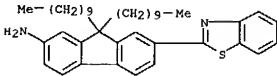
RN 219998-27-3 CAPLUS

CN [2,2'-Bi-9H-fluoren-7-amine, 7'-(2-benzothiazolyl)-9,9',9'-tetraethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

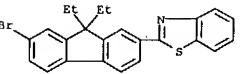


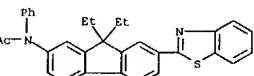
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
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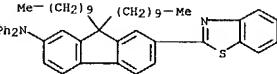
L3 ANSWER 43 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2000:36371 CAPLUS
 DOCUMENT NUMBER: 132:257698
 TITLE: Nonlinear spectrometer for characterization of organic
 and polymeric molecules
 AUTHOR(S): Negres, Raluca A.; Van Stryland, Eric W.; Hagan, David; Belfield, Kevin D.; Schafer, Katherine J.; Przhonska, Olga V.; Reinhardt, Bruce A.
 CORPORATE SOURCE: Sch. Optics, CREOL/Univ. of Central Florida, Orlando, FL, USA
 SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1999), 3796(Organic Nonlinear Optical Materials), 88-97
 PUBLISHER: SPIE-The International Society for Optical Engineering
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB The authors have developed a femtosecond continuum spectrometer to measure nonlinear absorption spectra from 300 nm in the UV to 1.7 μ m in the IR. This method is applied for measuring NLA spectra of semiconductor, organic and polymeric materials. The pump-probe nature of the experiment also allows the temporal response to be determined, thus helping in the determining of the underlying phys. mechanisms for the nonlinearity. The authors describe studies of two-photon absorption in alkyl fluorenes and excited state absorption dynamics in polymethines using this spectrometer.
 IT 262607-30-7B 262607-32-9B 262607-33-0B
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (nonlinear spectrometer for characterization of organic and polymeric mol.)
 RN 262607-30-7 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl- (9CI) (CA INDEX NAME)


 RN 262607-32-9 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-didecyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

L3 ANSWER 44 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1999:211109 CAPLUS
 DOCUMENT NUMBER: 130:352688
 TITLE: Synthesis and characterization of new two-photon absorbing polymers
 AUTHOR(S): Belfield, Kevin D.; Reinhardt, Bruce A.; Brott, Lawrence L.; Clarson, Stephen J.; Najjar, Usama; Pius, Silvester M.; Van Stryland, Eric W.; Negres, Raluca
 CORPORATE SOURCE: Department of Chemistry, Department of Mechanical, Materials & Aerospace Engineering & School of Optics, University of Central Florida, Orlando, FL, 32816, USA
 SOURCE: Polymer Preprints (American Chemical Society, of Polymer Chemistry) (1999), 40(1), 127-128
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB 2-Benzothiazoyl-7-(N-vinylbiphenyl-N-phenylamino) derivative monomer was prepared from 2,7-dibromo-9,9-diethylfluorene and copolymerd. with styrene to give a copolymer. Fluorenyl-containing polysiloxanes with low glass temperature were prepared by hydrosilylation of the fluorenyl vinylbiphenyl monomer with polysiloxanes.
 IT 225113-41-7B 225113-43-9B 225113-45-1B
 225113-47-3P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (intermediates; in preparation of fluorenyl vinylbiphenyl monomers)
 RN 225113-41-7 CAPLUS
 CN Benzothiazole, 2-(7-bromo-9,9-diethyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)


 RN 225113-43-9 CAPLUS
 CN Acetamide, N-[7-(2-benzothiazolyl)-9,9-diethyl-9H-fluoren-2-yl]-N-phenyl- (9CI) (CA INDEX NAME)

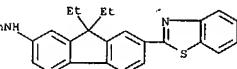

 RN 225113-45-1 CAPLUS

L3 ANSWER 43 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 Me-(CH₂)₉ (CH₂)₉-Me

 RN 262607-33-0 CAPLUS
 CN Benzothiazole, 2-(9,9-didecyl-7-nitro-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)

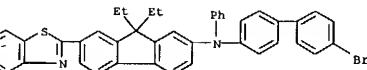
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

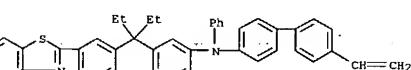
L3 ANSWER 44 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 INDEX NAME)



RN 225113-47-3 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N-(4'-bromo[1,1'-biphenyl]-4-yl)-9,9-diethyl-N-phenyl- (9CI) (CA INDEX NAME)



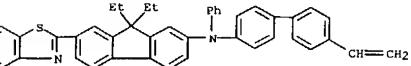
IT 225113-48-4D, reaction products with polysiloxanes
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation and characterization of)
 RN 225113-48-4 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9,9-diethyl-N-phenyl- (9CI) (CA INDEX NAME)



IT 225113-52-0P
 RL: SPN (Synthetic preparation); PREP (Preparation) (preparation and characterization of)
 RN 225113-52-0 CAPLUS
 CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9,9-diethyl-N-phenyl-, polymer with ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 225113-48-4
 CMF C44 H36 N2 S



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L3 ANSWER 44 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)

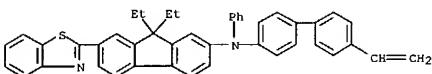
CM 2

CRN 100-42-5
CME C8 H8H₂C=CH-Ph

IT 225113-40-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and polymerization with styrene)

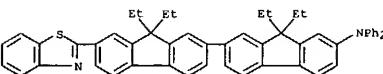
RN 225113-48-4 CAPLUS

CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-N-(4'-ethenyl[1,1'-biphenyl]-4-yl)-9,9-diethyl-N-phenyl- (9CI) (CA INDEX NAME)



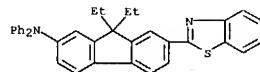
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 46 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:781324 CAPLUS
DOCUMENT NUMBER: 130:145737
TITLE: Probing two-photon excitation dynamics using
ultrafast
ultrafast
laser pulses
AUTHOR(S): Swiatkiewicz, J.; Prasad, P. N.; Reinhardt, B. A.
CORPORATE SOURCE: Photonics Research Laboratory, Departments of
Chemistry and Physics, State University of New York,
Buffalo, NY, 14260-3000, USA
SOURCE: Optics Communications (1998), 157(1-6), 135-138
CODEN: OPCOB8; ISSN: 0030-4018
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The authors probe the two-photon excitation dynamics of two new dyes, N,N-diphenyl-7-[2-(4-pirydyl)ethenyl]-9,9-di-n-decyl-fluoren-2-amine (AF250) and (7-(7-benzothiazol-2-yl)-9,9-diethylfluoren-2-yl)-9,9-diethylfluoren-2-yl)diphenylamine (AF250) using femtosecond
excitation
pulses by Z-scan and time-resolved pump-probe absorption measurements. Irradiance dependence of the induced absorption cross-section is linked
to linear absorption of the two-photon excited state. The excited state linear absorption cross-section are 1.0 + 10⁻¹⁷ cm² for AF250 and 2.7 + 10⁻¹⁷ cm² for AF250. Relaxation of the two-photon excited state follows a complicated path with three distinct relaxation times. The longest ones, 1.6 ns for the AF250 and 1.9 ns for the AF250, are associated with the resp. lowest singlet life-times: 2.23 ns and 2.15 ns.
IT 219998-27-3
RL: PRP (Properties)
(probing two-photon excitation dynamics using ultrafast laser pulses)
RN 219998-27-3 CAPLUS
CN [2,2'-Bi-9H-fluoren]-7-amine, 7'-(2-benzothiazolyl)-9,9',9'-tetraethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 45 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:133764 CAPLUS
DOCUMENT NUMBER: 130:289152
TITLE: High-density three-dimensional optical data storage
in
a stacked compact disk format with two-photon writing and single photon readout
AUTHOR(S): Pudavar, Haridas E.; Joshi, Mukesh P.; Prasad, Paras N.; Reinhardt, Bruce A.
CORPORATE SOURCE: Photonics Research Laboratory, Department of Chemistry
and Physics, State University of New York at Buffalo, NY, 14260, USA
SOURCE: Applied Physics Letters (1999), 74(9), 1338-1340
CODEN: APPLAB; ISSN: 0003-6951
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Using a polymer block doped with a highly efficient two-photon dye, the authors achieved a high d. data storage with gray-scale control in multiple planes as stacked compact disks at a separation of 10 μ m. The absorption and fluorescence of the dye at the written spot shift to a longer wavelength, permitting an easy fluorescence mode readout with a linear excitation using an inexpensive laser source. The storage capacity in this case is estimated to be 1012 bits/cm³.
IT 222617-85-8, AF 240
RL: MODA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(AF 240; high-d. three-dimensional optical data storage in stacked compact disk format with two-photon writing and single photon readout)
RN 222617-85-8 CAPLUS
CN 9H-Fluoren-2-amine, 7-(2-benzothiazolyl)-9,9-diethyl-N,N-diphenyl- (9CI) (CA INDEX NAME)

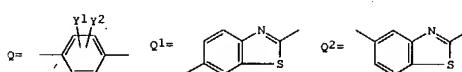


REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 47 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1993:549604 CAPLUS
DOCUMENT NUMBER: 119:149604
TITLE: Preparation of pyrimidinylbenzothiazole derivatives
as
liquid crystals and liquid crystal compositions
containing them for liquid crystal devices and
display
INVENTOR(S): Nakamura, Shinichi; Takiguchi, Takao; Iwaki, Takashi;
Tokano, Goji; Yamada, Yoko
PATENT ASSIGNEE(S): Canon KK, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 69 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
PRIORITY APPLN. INFO.:
PATENT NO. KIND DATE APPLICATION NO. DATE

JP 05125076 A2 19930521 JP 1991-289934 19911106
JP 1991-289934 19911106

GI

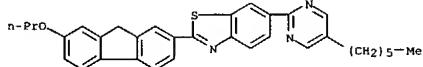


AB R1A1B1A2R2 [I; R1, R2 = Cl-18 linear or branched alkyl, wherein 1 or 2 non-adjacent CH₂ groups may be replaced by Z (wherein Z = O, S, ZC(O), C(O)Z, CO, COO₂, CONR₃ (wherein R₃ = H, Cl-5 alkyl), NR₃CO, CH:CH, or C:tbond:C; A1 = 2,5- or 5,2-pyrimidinediyl; A2 = single bond, Q (wherein Y₁, Y₂ = H, halo, cyano, CF₃), 1,4-cyclohexylene, 2,5- or 5,2-pyrimidinediyl, -pyridinediyl, or -thiaolediyl, 2,5-thiophenediyl, 1,3,4-thiadiazole-2,5-diyl, 2,6-naphthylene, 2,7-fluorenylene, 9,10-dihydro-2,7-phenanthrenylene; B1 = Q1, Q2] are prepared. A liquid crystal composition, preferably a chiral smectic liquid crystal composition, contains I. I provide ferroelec. chiral smectic liquid crystal compns. with good switching property, improved low temperature driving property, and reduced temperature dependence of response speed.

IT 149776-65-8
RL: USES (Uses)
(ferroelec. chiral smectic liquid crystal compns. containing, for display devices)
RN 149776-65-8 CAPLUS
CN Benzothiazole, 6-(5-hexyl-2-pyrimidinyl)-2-(7-propoxy-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)

L3 ANSWER 47 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN

(Continued)

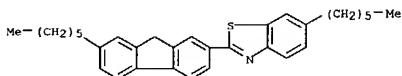


L3 ANSWER 48 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1992:162651 CAPLUS
 DOCUMENT NUMBER: 116:162651
 TITLE: Mesomorphic compounds for liquid crystal compositions
 for display devices
 INVENTOR(S): Iwaki, Takashi; Takiguchi, Togano, Takeshi; Yamada, Yoko; Nakamura, Shinichi
 PATENT ASSIGNEE(S): Canon K. K., Japan
 SOURCE: Eur. Pat. Appl., 212 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

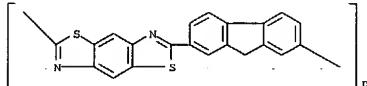
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 440061	A1	19910807	EP 1991-100694	19910121
EP 440061	B1	19980401		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
JP 03227980	A2	19911008	JP 1990-19725	19900130
JP 2974352	B2	19991110		
JP 04029984	A2	19920131	JP 1990-332694	19901129
JP 3029124	B2	20000404		
CA 2034309	AA	19910723	CA 1991-2034309	19910116
CA 2034309	C	19970401		
EP 667385	A1	19950816	EP 1995-101836	19910121
EP 667385	B1	19990804		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
AT 164577	E	19980415	AT 1991-100694	19910121
AT 182920	E	19990815	AT 1995-101836	19910121
US 5236619	A	19930817	US 1991-643377	19910122
US 5284599	A	19940208	US 1992-915888	19920720
PRIORITY APPLN. INFO.:				
JP 1990-19725 A 19900130				
JP 1990-332694 A 19901129				
EP 1991-100694 A3 19910121				
US 1991-643377 A3 19910122				

OTHER SOURCE(S): MARPAT 116:162651
 AB The mesomorphic compds. have the general formula R1A1B1A2R2, where R1, R2 = C3-18 alkyl in which 1 or ≥2 nonadjacent CH2 groups may be replaced by Z, ZCO, COZ, COOCO, CON(R3)CO, CH:CH, or C:tplbond:C; Z = O or S; R3 = H or C1-5 alkyl; B1 = benzothiazol-5,2-diyl or -6,2-diyl; A1 = single bond, 1,4-phenylene (possibly mono- or disubstituted with F, Cl, Br, Me, CN, and/or CF3), or 1,4-cyclohexylene; A2 = single bond, A3, or A3A4; and A3, A4 = A1, 2,6-naphthylene, 5,2- or 2,5-pyridinylene, 5,2- or 2,5-pyrimidinylene, thiophen-2,5-ylene, fluorene-2,7-diyl, or 9,10-dihydrophenanthren-2,7-diyl.
 IT 139716-35-1P
 RL: PREP (Preparation)
 (preparation of, for liquid crystal compns. for display devices)

L3 ANSWER 48 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN (Continued)
 RN 139716-35-1 CAPLUS
 CN Benzothiazole, 6-hexyl-2-(7-hexyl-9H-fluoren-2-yl)- (9CI) (CA INDEX NAME)



L3 ANSWER 49 OF 49 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 1989:534846 CAPLUS
 DOCUMENT NUMBER: 111:134846
 TITLE: Rigid-rod benzobisthiazole polymers with reactive fluorene moieties: I. Synthesis and preliminary characterization
 AUTHOR(S): Dotrong, My; Evers, Robert C.
 CORPORATE SOURCE: Res. Inst., Univ. Dayton, Dayton, OH, 45469, USA
 SOURCE: Polymeric Materials Science and Engineering (1989), 60, 507-11
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB Benzobisthiazole polymers capable of thermal crosslinking were prepared by polymerization of 2,7-dicyanofluorene or 2,7-fluorenedicarboxylic acid with 2,5-diaminobenzenedithiol dihydrochloride and terephthalic acid or terephthalic acid chloride. The polymers were soluble only in methanesulfonic acid or polyphosphoric acid, and had thermooxidative stabilities higher than those of conventional benzobisthiazole polymers. Gelling of the polymers occurred at temps. >165°.
 IT 122727-25-7P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation and characterization of)
 RN 122727-25-7 CAPLUS
 CN Poly(benzo[1,2-d:4,5-d']bisthiazole-2,6-diyl-9H-fluorene-2,7-diyl) (9CI) (CA INDEX NAME)



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